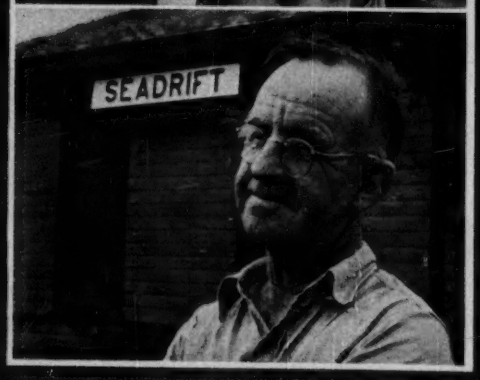
Chemical Week

June 20, 1953



MCA's Foster: He spearheads new drive for public understanding of industry's problems . . . p. 13

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A McGRAW-HILL PUBLICATION

"WHY DO YOU ALWAYS ORDER SOLVAY ALKALIES, JOE?"

"I'll tell you why I count on SOLVAY *FIRST* for Alkalies...

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But probably the most important thing I get is Solvay's "Industry-Wise" Technical Service . . . a specialized, exclusive service that includes technicians who have an intimate knowledge of *my* industry. They give me advice and suggestions—and it costs me nothing.

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Chemical Week

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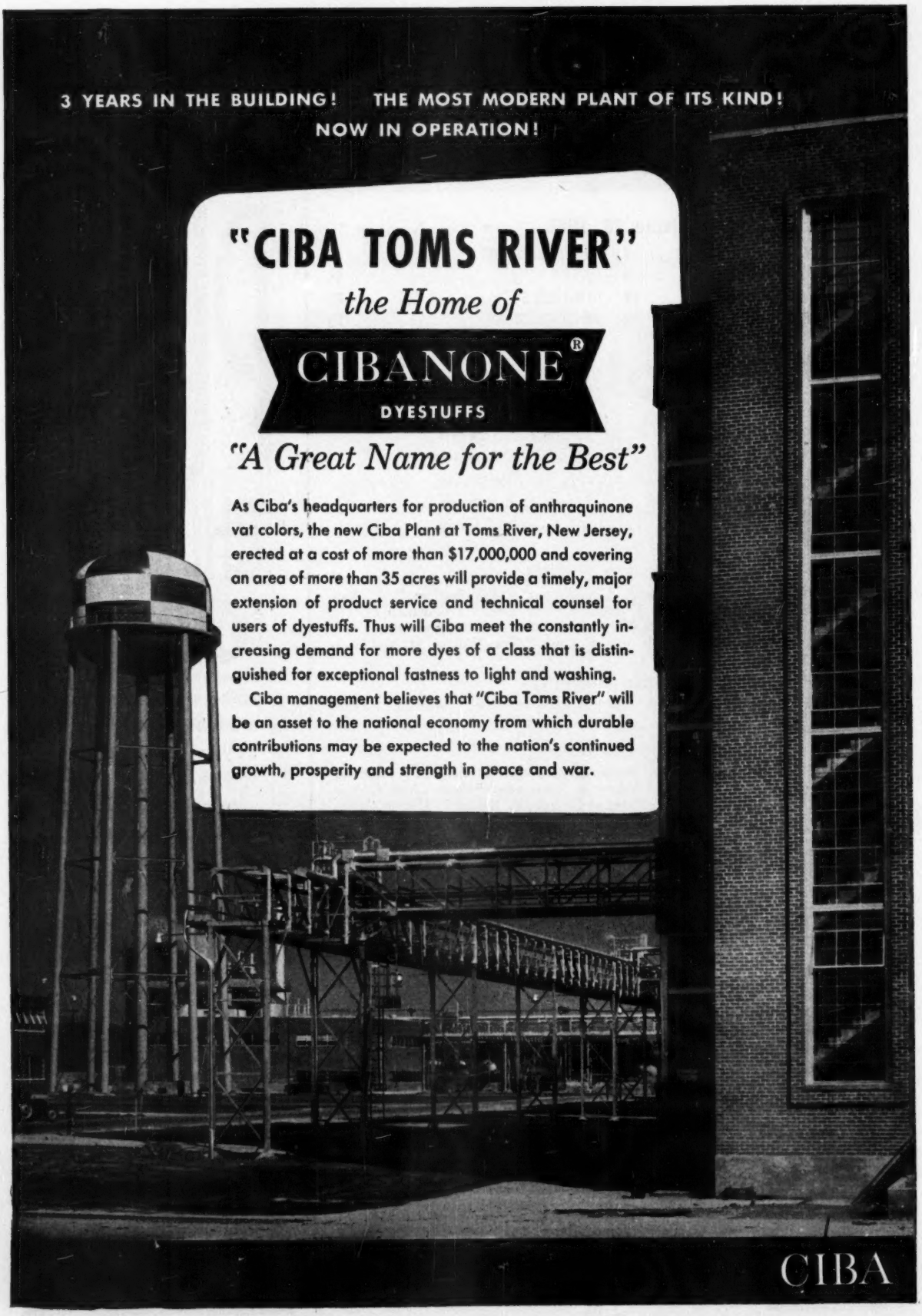
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Will They Improve Your Product or Process?

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OPINION . . . . . .

Cleaner Patent

TO THE EDITOR: In the May 16 issue there is a news article, "A Rub With Instant Cleaners," which contains the following paragraph:

"One result was uncertainty on the part of many distributors. Most of the nonlicensees feel that their formulations are not covered by the patent (Lowenheim, original holder of the patent expressed no opinion as to whether his patent was applicable to the present dip cleaner formulations); one (G. N. Coughlan, W. Orange, N.J.) has sued International for damaging its business."

I am attorney for International Industries and Developments, Inc., the owner of Lowenheim Patent No. 2,628,199, in the litigation with G. N. Coughlan, and the statement regarding that litigation is misleading . . .

. . . International Industries and Developments, Inc. instituted Civil Action No. 78-269 in the U.S. District Court for the Southern District of New York against G. N. Coughlan Co. for infringement of Lowenheim Patent No. 2,628,199. Coughlan filed a counterclaim and it was in the counterclaim that Coughlan charged International with damaging its business.

A motion has been brought to dismiss Coughlan's counterclaim for failure to state a claim on which relief can be granted and that motion is now in the judge's hands for decision . . .

The entire file . . . is available for inspection at the . . . Federal Court House in Foley Square, New York City . . .

BARTHOLOMEW A. DIGGINS
Strauch, Nolan & Diggins
Washington. D.C.

Caveat Emptor?

TO THE EDITOR: . . . Whoever wrote the article on dip-type silver cleaners (*May 16*) might have had more respect for the reporting standards of *Good Housekeeping* than apparently he has for your own.

You state this: "That *Good Housekeeping* overplayed the dangers and probabilities of damage necessitating return of silver to the factory for refinishing is evidenced by the record the cleaners have established." The fact that you make this statement does not make it true. Nor have you anything to go by, apparently, except the statement of a wholly interested manufacturer.

You state that "CW checked with several leading silversmiths to learn their reactions to the story. Their comment scarcely supported the *Good Housekeeping* tirade." You then list four leading manufacturers and state that "apparently, none of the four firms consulted had advance knowledge of the article." Your statement is untrue. All four firms had full knowledge of the article months in advance of its publication.

You state that of the four firms "one seemed in thorough agreement with the article; others appeared lukewarm in support of it." Your statement is untrue. All four firms expressed complete support of it. All promptly ordered reprints. There has not been one adverse comment from any manufacturer.

Finally I would like to know on what basis your publication presumes to editorialize in a news article . . . by stating, "It is not impossible, however, that some firms will eventually secure the *Good Housekeeping* seal . . . the magazine had, earlier this year, condemned cleaning compounds containing chlorinated hydrocarbons. Nonetheless, manufacturers of the rug cleaner, Glamorene, which contains such a compound, was able to get the *Good Housekeeping* seal."

. . . Advertising for Glamorene was refused because of differences between the manufacturer and ourselves concerning the product's label . . . The changes requested . . . have been made . . . has earned our Guaranty Seal . . .

I shall appreciate publication in full at the earliest possible moment . . .

HERBERT R. MAYES
Editor
Good Housekeeping
New York, N. Y.

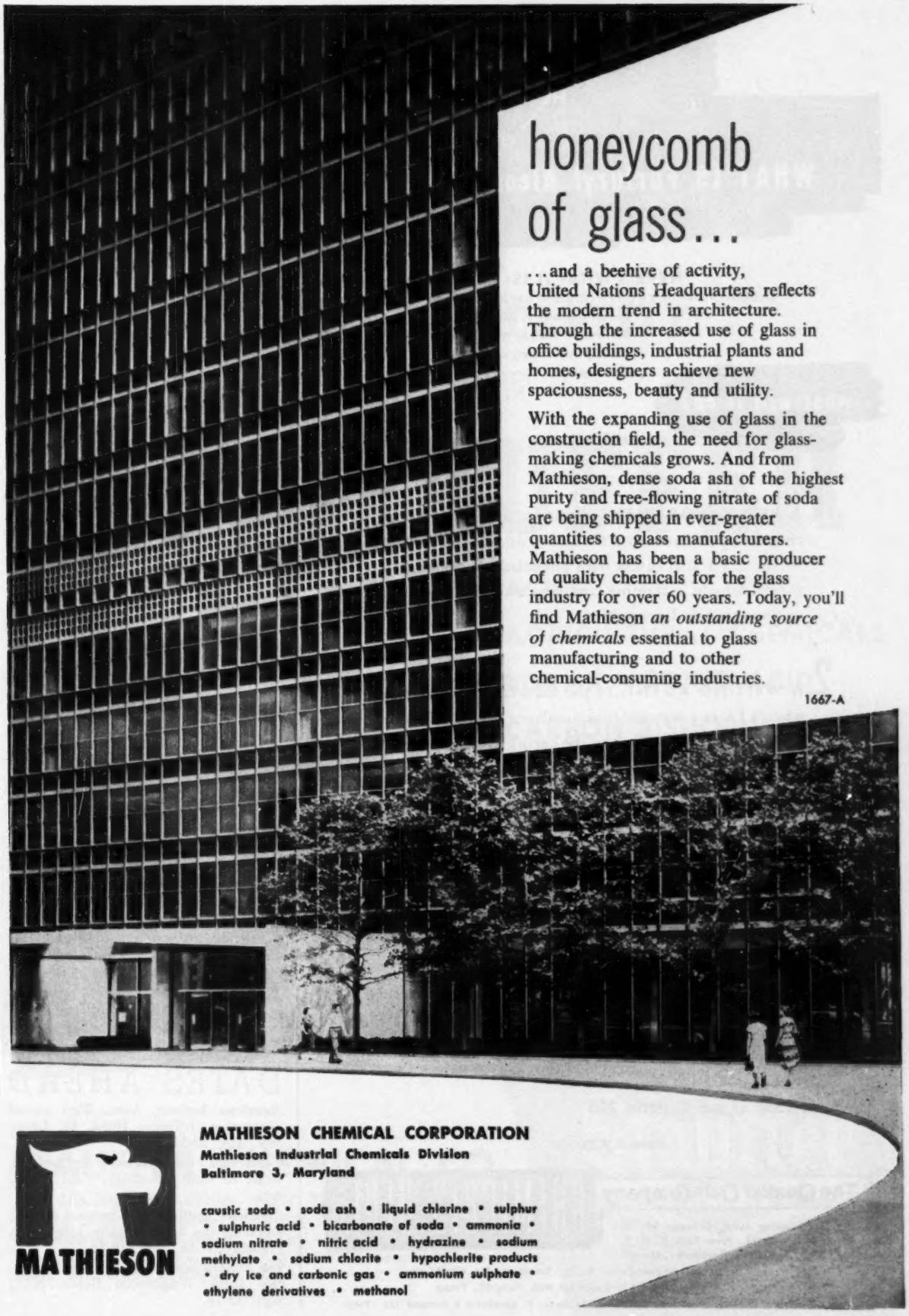
When anyone decides to publish a condemnatory article he must—as Reader Mayes surely appreciates —(1) have all the facts to buttress his arguments, and (2) temper his sensitivity to criticism.

We felt that our reporting on industry reaction to Good Housekeeping*'s article was both honest and accurate. That conviction we still hold.*

The Feb., 1953, Good Housekeep-

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.



honeycomb of glass...

...and a beehive of activity, United Nations Headquarters reflects the modern trend in architecture. Through the increased use of glass in office buildings, industrial plants and homes, designers achieve new spaciousness, beauty and utility.

With the expanding use of glass in the construction field, the need for glass-making chemicals grows. And from Mathieson, dense soda ash of the highest purity and free-flowing nitrate of soda are being shipped in ever-greater quantities to glass manufacturers. Mathieson has been a basic producer of quality chemicals for the glass industry for over 60 years. Today, you'll find Mathieson *an outstanding source of chemicals* essential to glass manufacturing and to other chemical-consuming industries.

1667-A

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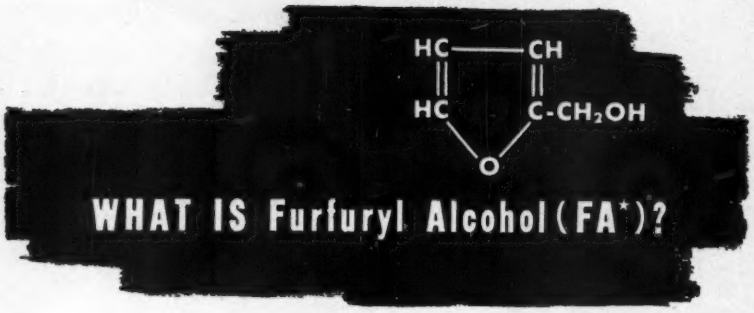

WHAT IS Furfuryl Alcohol (FA*)?

HERE'S WHAT IT IS: an amber colored primary alcohol containing a furan ring and having the following properties:

Specific gravity, 20/20°C.	1.134
Refractive index, n 20/D	1.484
Flash point (open cup), °C.	75.0
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It will act as:

1. **A RESIN INGREDIENT.** Resins made from FA are chemically resistant to acids and to alkalies as well as to solvents. FA also reacts with phenolic compounds, formaldehyde, melamine, and urea to form resins with various modified properties.

2. **A WETTING AGENT.** In the manufacture of grinding wheels FA is a wettant plus a solvent for the phenolic resin binder and reacts with it in the curing cycle, resulting in a tough bond with minimum production of volatiles.

3. **A SOLVENT.** FA is an excellent solvent for nitrocellulose and many synthetic and natural resins; it is miscible with water, chloroform, coal tar solvents, and non-paraffinic hydrocarbon solvents.

4. **A DISPERSANT IN TEXTILE PRINTING.** Difficultly soluble dyes such as leuco vat ester salts are dispersed with FA and the storage stability of these solutions is improved.

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OPINION . . . . . .

ing *said this about chlorinated hydrocarbon-containing cleaners—of which now-acceptable Glamorene is one:*

". . . These cleaners are not safe enough for home use. So *Good Housekeeping* does not accept them for advertising."—ED.

Draw a Long Breath

TO THE EDITOR: As a collector of Startling Statistics, I was interested to note (*CW, May 30*) that, while the Sabine River has an average daily flow of 6 billion gal., it will be brought under control (partial control, at least) by building a dam to impound 30 million gal. (1/200 of average daily flow).

You also introduced another startling note; at the point where the Orange fresh-water canal taps in, the river has a minimum flow of 200 gal./day. Presumably, rapacious upstream consumers have drained off the remaining 5,999,999,800 gallons by this time.

On p. 13, however, you come to the rescue with an appropriate comment:

"I can't believe that!" said Alice.

"Can't you?" the Queen said in a pitying tone. "Try again: draw a long breath, and shut your eyes."

Fine; but for the numerous short-winded, open-eyed CW readers who will spot this situation, how about the *real* figures?

W. L. EVERSON
Shell Development Co.
Emeryville, Calif.

CW is thinking of hiring an ex-U.S. Treasury man who isn't confused by millions or billions—or even trillions. The dam will impound 43,560 times as much water as we stated—3 to 4 million acre-feet, not 3 to 4 million cubic feet (or 30 million gallons). And the minimum flow where the canal taps in is 200 million gallons a day—not, of course, 200 gallons.

But if you draw a long breath, shut your eyes and really try, you can easily overlook the "acre" and the "million" that our informant omitted.—ED.

DATES AHEAD

American Soybean Assn., 33rd annual convention, Jefferson Hotel, St. Louis, Mo., Aug. 20-21.

Conference on Nuclear Engineering, Univ. of Calif., Berkeley, Calif., Sept. 9-11.

American Institute of Chemical Engrs., Fairmont and Mark Hopkins hotels, San Francisco, Calif., Sept. 13-16.

The Electrochemical Society, Ocean Terrace hotel, Wrightsville Beach, N.C., Sept. 13-16.

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MINERAL FILLERS

Chemical Week
BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

Points brought out at the Manufacturing Chemists' Assn. panel discussion on tariffs last week should concern every chemical executive who wants to export or is threatened by imports.

Chairmanned by Cyanamid's Huston and including Cary Wagner, SOCMA's Counsel Lincoln, Du Pont's Singer and Merck's Reynolds, the panel expressed the views of a chemical cross-section, represented not only the thinking of MCA but also that of the Synthetic Organic Chemical Manufacturers Assn., which met concurrently with MCA.

Worrying domestic producers even more than advocacy of free trade in this country are the trade policies of producers and their governments abroad. Eager for dollars, they will use all the tricks in the bag—subsidies, profit-punishing low prices here that are made up by higher prices to other countries—anything to snag the U. S. market.

Their suggestion: more teeth in our "antidumping" law, which is separate from our tariff law, goes back to 1921. Under it Customs must transmit its suspicions in a particular instance to the Secretary of the Treasury, who can act or not, on his discretion. For many yeas past he's been more discreet than active, mending diplomatic fences while neglecting industry's protection walls.

The industry generally supports Senator Long's (D., La.) bill, which would make action against "dumpers" mandatory—as it is in Canada.

Other suggestions: combat the fuzzier, less tenable "Trade, Not Aid" arguments with solid facts. Hire an independent fact-finding agency to gather the data, if necessary, since government bureaus are slow to get out figures (the 1950 Commerce Year Book is the latest one out).

The chemical men took pains to point out that automotive-minded Detroit looks at foreign trade through a different pair of spectacles. Because its mass-production techniques are generally superior, it doesn't worry about the trickle of auto imports. But it would like to see foreign nations earn dollars so that it could regain its export market (11% of output in 1929, only 3½% in 1951). But domestic chemical industries have no basic advantage over Germany in drugs, Italy in rayon—imports that are currently troublesome to doldrummed U. S. drug and textile firms.

New MCA President Foster sounded in his remarks the sincere, constructive, objective attitude of this panel session: "We should not speak too narrowly. . . . Such comments could better come from a less successful, less prosperous industry. We must look at what is best in the long run for 160,000,000 Americans. Get all the facts you can and get them right, take a broad look, and speak objectively."

If you're looking to the Defense Dept. as a source of funds to increase basic knowledge by supporting "pure" research, you're probably looking in vain. Defense Chief Wilson himself advocates a cut in the research budget from $1.9 to $1.3 billion to trim this kind of research—which he defines as that "where if it was successful it could never possibly be of use."

He may have trouble with some congressmen. Members of the

Senate Appropriations Committee questioned Wilson closely, feared that a "fat-trimming" policy now may cripple our future military effectiveness, may appear as shortsighted in retrospect as our decade-ago failure to push jet research appears now.

But things are different over in Secretary Benson's Dept. of Agriculture. Here research is the only major activity that's being expanded rather than curtailed. Hence you can expect an intensive drive to develop industrial uses for such surplus crops as cotton, lard and turpentine.

Don't expect any further word in the near future from the Food & Drug Administration on polyoxyethylene-based emulsifiers. FDA's Division of Pharmacology has a number of research projects under way (CW Newsletter, June 13); The present timetable calls for some report on Span and Tween-60 types in about six to eight months, and a final report on Myrj-45 in June, 1955—two years from now.

It's thought in Washington that the rumored report by the National Research Council's Food Protection Committee on Myrj-45 will be made within the next two months.

Chemical expansion is hightailing along faster than anyone expected—faster even than McGraw-Hill's survey showed (CW, April 11) or than the U. S. Dept. of Commerce's figures indicated (CW Newsletter, Mar. 28). That's the conclusion to be drawn from data compiled by the Securities and Exchange Commission from reports submitted to it by corporations with registered securities and from a large sample of non-registered firms.

The chemical segment, as of last month, has spent or is planning to spend through the first three quarters of 1953 a total of $1,305 million on new plants and equipment—a full 25 per cent more than the $1,041 million spent in the corresponding portion of record-breaking 1952. It won't take a big fourth quarter to top last year's $1,451-million total.

And each week's expansion news is more concrete evidence of the trend than projected statistics:

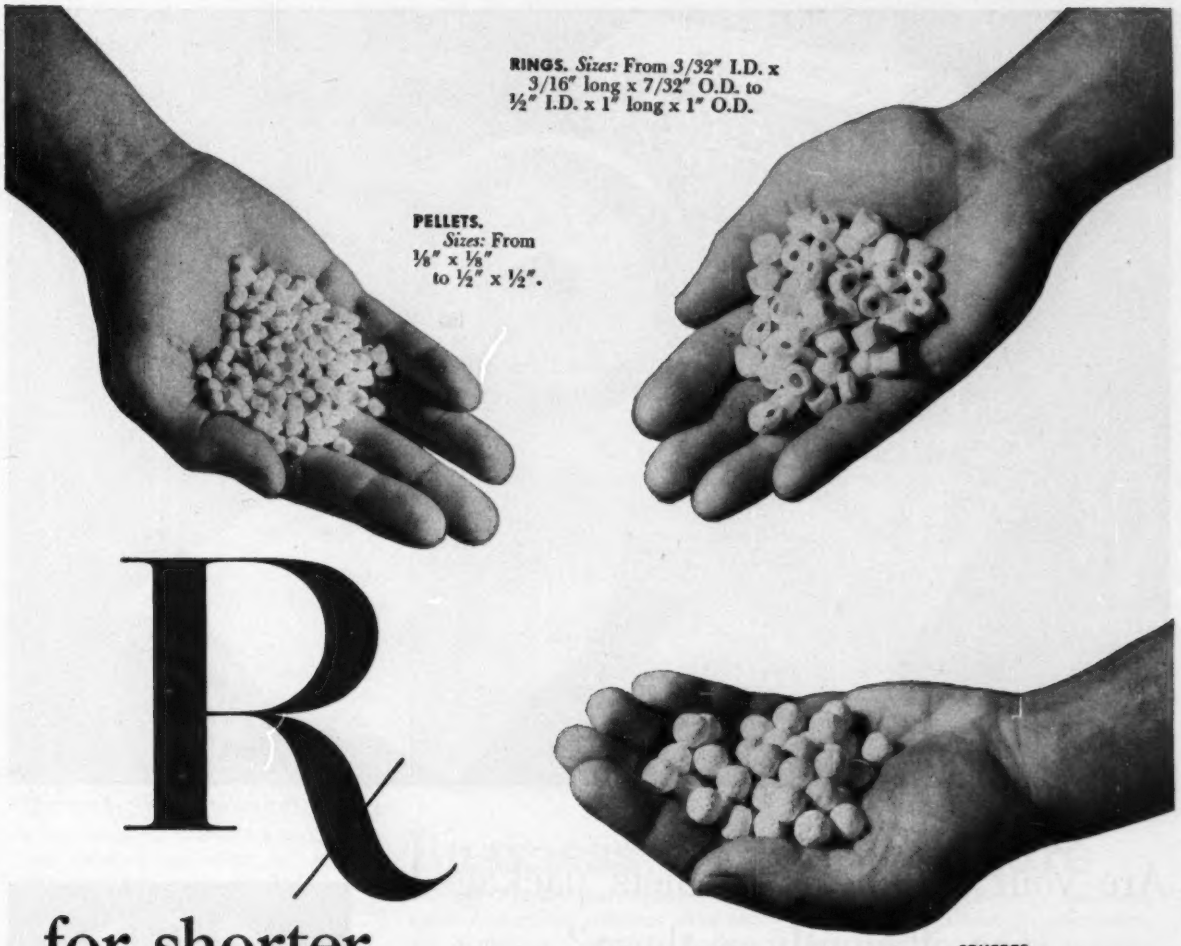
Allied Chemical & Dye's Nitrogen Division is now proceeding with construction of its 75,000-tons-year ammonia plant at La Platte, Neb. Work has been deferred pending assurance of gas supply, but now the Federal Power Commission has authorized Northern Natural Gas Co. to supply gas on an interruptible basis. Allied wanted it on a firm basis, but rather than encounter more delay it decided that half a loaf is better than none.

Further expansion is promised by these recently granted certificates of necessity:

- Union Carbide (S. Charleston, W. Va.), chemical products, $2,951,300 at 25%.
- Allied Chemical (Painesville, O.), sulfuric acid, $3,300,000 at 45%.
- Allied Chemical (Ironton, O.), naphthalene, $311,500 at 60%.
- Baxter Laboratories (Morton Grove, Ill.), research and development of miltary chemicals, $92,040 at 70%.

The chemical industry has come to the relief of handshaking politicians. Rep. Norris Poulson (R., Calif.) broke his little finger in an auto accident last January. Politicking became too much for his painful right hand, so Navy Hospital doctors in Washington fitted him out with an unnoticeable plastic sheath.

. . . The Editors



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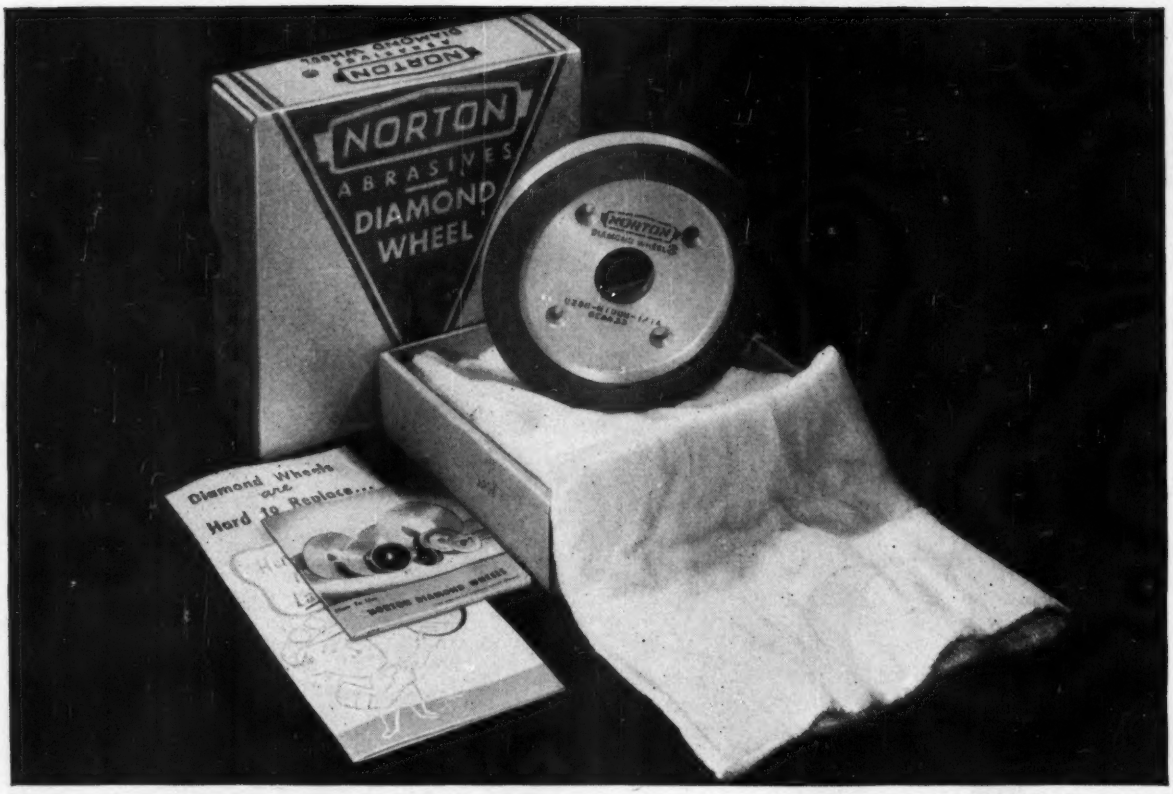

Photo courtesy of Norton Co., Worcester, Mass.

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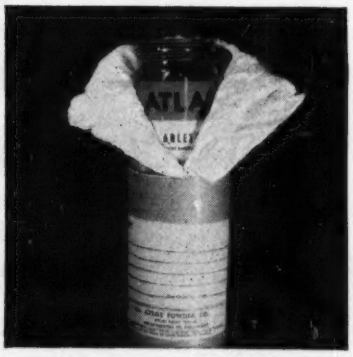

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*T. M. REG. U.S. & FOREIGN COUNTRIES

BUSINESS & INDUSTRY . . . . .

NPA in Mufti

The National Production Authority, a keystone in the defense mobilization effort, is about to go into mufti. Instead of functioning as an emergency controls agency, the Dept. of Commerce envisions it as a group to provide different business services.

Commerce, while it hasn't settled on a name for its offspring, has mapped out the agency's functions and organization. Like NPA, it will be set up on an industry basis. Chemicals comprise one of about 20 main sections.

The new industry divisions (1) will act as a claimant for controlled materials under the new defense materials system, (2) will continue the statistical work and industry reporting done by the chemical division in the days before Korea, and (3) carry out any new functions that might be assigned when Secretary Weeks' ideas on business services are jelled. In general, the idea is to make the division the liaison between government and the chemical industry.

Directors of most of the divisions will be industry executives who serve six-month stints. This rotation provision, too, was brought over from NPA, where it was first proposed by Mathieson's Tom Nichols. (Nichols served as deputy to NPA Administrator Manly Fleischmann during the early mobilization period.)

It was through this setup that NPA gained a "stockpile" of industry men who knew the ins and outs of agency work.

Does Macey Tell Gimbel? But with the major share of the mobilization build-up done, conditions have changed. Some of the chemical concerns that Commerce consulted have expressed wariness about "peacetime" executive rotation. These managements object to the idea of having a competitor in a position where he might learn confidential capacity and production information.

Perhaps a major value of the proposed agency, from industry's view, would be in providing a common meeting ground free from antitrust prosecution, similar to the industry advisory committees that functioned under NPA.

GREENBRIER'S GREENS: A round between rounds of taxes and tariffs.

Business Before Pleasure

Expanded production capacity, taxes, tariffs and public relations were batted around last week as much as golf balls by 542 of the chemical industry's top executives. The sultry scene: White Sulphur Springs' Greenbrier Hotel; the occasion: Manufacturing Chemists' Assn.'s 81st annual meeting.

Flocking in by train, auto and company plane, industry leaders gathered in the Greenbrier's air-conditioned auditorium, heard Air Reduction's Charles S. Munson reaffirm faith in MCA's "sound rate of progress," promise a quickened tempo of activity now that firm foundations have been laid.

Plaudits and Problems: To William C. (for Chapman) Foster* went the long-deliberated first full-time presidency of MCA—" a dynamic spokesman for a dynamic industry." To the Texas Chemical Manufacturing Council, established with MCA's blessing to meet specialized problems at a local level, congratulations for a job well done.

Decline in specific problems of a defense nature requiring attention in Washington is given by Munson as the reason for dissolution (last April) of MCA's Defense Mobilization Committee. Similarly, changing conditions (this time the switch in administrations) sparked the recent establishment of a tax policy committee, fostered increased emphasis on conferences with the executive branch of the government.

Further, Munson thinks the association should make additional contributions of industrial statesmanship to the nation as a whole "in the interest of furthering the chemical industry's own welfare."

Referring to the recent Rensselaer session (*CW, May 30*) when its Facts Book was distributed, Public Relations Committee Chairman H. W. Fisher pointed out the sore need for grass-roots education, predicted MCA's work in the field will get into full gear this year.*

At the dollars-and-cents level, this year's MCA budget will total $426,000; public relation's share will be 33% (or $145,000).

The industry's growing productive capacity is a cause for worry, according to some segments of the industry; other spokesmen feel sure that the growing diversity of end uses and

* See p. 14.

* A hint on one way to do it: Solvay gave the New York *Herald Tribune*, F. S. McGraw, the *Times*, to each MCA guest—with appropriate salutations.

opening up of new markets insure a bright future for the output of some $2 billion's worth of plants coming in this year.

Taxes are a continuing plague, moan beleaguered executives—not so much the 58% bite of profits for the industry as a whole, but the excess profits levy, which gobbles up as much as 82% of the gain from new lines experiencing rapid growth.

Synthetic organic chemical manufacturers are keeping an eagle eye on possible tariff revisions "which would discourage full-scale domestic output." The break-even point of some capacity is about 85% today; industry spokesmen argue that lowering the bars unadvisedly could cut the ground out from under research and development programs currently costing some $150 million/year.

MCA members listened closely too, to what Commerce Secretary Weeks had to say about Government in their future. His comments: "I loathe the excess profits tax, regard it as a monstrosity." Nonetheless, he averred, it is essential that industry back its extension—as the President has requested—to the end of this year. Why: "An unreasonable demand for premature tax relief—sparked in part by truce prospects—may injure our chances to nail down solvency."

On the hot-potato subject of tariffs, Weeks said calmly: "Some American industries, blinded by the gleam of self-interest, go on the theory that 'every man for himself and the devil take the hindmost.'" Said he: "They may discover that the devil takes all."

Eyes Westward

Food Machinery & Chemical Corp., casting an eager eye at growing West Coast glass and aluminum industries, this week brought its soda ash facilities at Westvaco, Wyo. (near Green River) up to commercial production levels. Not only is this the first wholly new soda ash manufacturing operation in the U. S. since 1935, but also, the new producer is the first to enter the industry since 1912.

FMC's Westvaco Chemical Div. will operate the plant for Intermountain Chemical Co., will also act as exclusive sales agent. Tentative probing of an oil test drill 14 years ago set the wheels in motion, revealed existence of a practically pure deposit of trona some 10-20 ft. thick at an average depth of about 1,500 ft. below the Green River basin of Wyoming. A working shaft was sunk in 1947; approximately $2 million was thrown into mine development, pilot-planting.

Today's result: an $18-million, 300,000-ton plant is being boomed as the snowball destined to avalanche a great new Intermountain chemical industry.

Company officials, assessing the 5 million ton/year total annual U. S. consumption of soda ash (currently increasing at a rate of only 170,000 tons/year), think they'll be able to compete with present West Coast suppliers because of economies derived from their new process (despite estimates that today's neophyte producer of ammonia-soda must lay out in capital about $30,000/ton daily, as against old-timers' depreciated values as low as $3,000/ton). Also, Westvaco can point to studies that show that only 6% of today's soda ash production comes from west of the Mississippi, yet 30% of all U.S. soda ash is consumed within its "economic shipping distance."

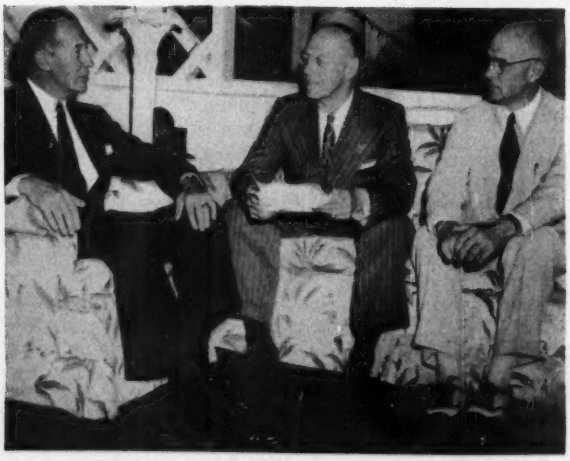
Both light and dense ash will be available to buyers, are reputed to meet both chemical and physical requirements of all soda ash-consuming industries. Westvaco will be able to ship as far east as the Midwest.

Undersecretary of Commerce, . . .

. . . ECA Administrator, . . .

WIDE WORLD, INTERNATIONAL

. . . and Deputy Defense Secretary . . .



. . . now Foster (left) becomes MCA president

He's Washington-Wise

BILL FOSTER, in joining the top officers of the Manufacturing Chemists' Assn. last week, simultaneously makes his first nongovernment-agency contact with the chemical field.

The new president got his own industrial experience in 24 years with Pressed and Welded Steel Products Co. (Long Island City). He received a leave of absence from the company presidency in 1946 to become a government official.

Commented the *Washington Post* when he became head of the Economic Cooperation Administration in 1950: "Foster has long had the reputation as the best administrator in Washington."

At 56, suave Bill Foster brings seven years of government experience to MCA, will help the association maintain the liaison it desires with different branches of federal officialdom.

THE COMMUNITY'S NEWSPAPER — CHEMICAL CENTER OF THE SOUTHWEST

Henderson HOME NEWS

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TITANIUM CENTER OF THE WORLD — NEVADA'S THIRD LARGEST CITY

VOLUME III — HENDERSON, NEVADA — THURSDAY, MAY 21, 1953 — FIVE CENTS

CITY AWAITS ITS FIRST ELECTION SATURDAY

'Yes' on School Bonds Wins By Huge Majority

Here's What the Candidates Say:

Henderson Candidates Map Final Campaign Strategy

Mayor French Asks For Patience And Cooperation

Political Arguments Wax Hot At City's First Rally

New City of Henderson Heads Plan First Confab

HENDERSON VOTE RESULTS

Expect Big Vote In Henderson Election

DR. JAMES B. FRENCH Elect Henderson Mayor

LOUIS F. LAPORTA Councilman Ward 3

N. B. VAN WAGENEN Councilman Ward 1

PAUL A. DICKOVER Councilman Ward 5

WILLIAM J. RIGBY Councilman Ward 4

JOHN J. IVORY Councilman Ward 2

HENDERSON ELECTS FRENCH: . . . and industry doesn't receive the wholehearted good will it expected.

Rebuff in Nevada

When Dr. James B. French—a young surgeon with no political experience—took over the mayoralty reins of newly incorporated Henderson, Nev., last week, the chemical industry clustered just outside the city limits received a slap on the wrist.

French, who was a middle-of-the-road candidate, forthrightly condemned "town domination" by Basic Management, Inc.* said he thought the plants, in offering to give the city water and sewage systems, had actually presented it with a $40,000 bill—the amount it would take to bring the two systems up to snuff.

Bitter pre-election statements had split the town into violently pro- and anti-industry camps. Top targets in the campaign crossfire were French, Hershel Trumbo, head of the Henderson telephone company and president of the chamber of commerce, and W. B. "Bill" Byrne, state assemblyman from Clark County.

Trumbo bore a "plant-man" stigma, was accused of being part of an alleged pressure bloc that succeeded in excluding the plant site from Henderson's corporate limits. Some of the plants wished to avoid almost certain city taxes and zoning regulations, particularly in regard to expansion and air pollution. (One company let rumor have it that it would even pull out of Henderson altogether if its plant were included in the city limits).

Byrne's platform: he favored a package liquor store and slot machines in the town, was openly opposed by local church officials.

Out of Nowhere: Dr. French was a real dark horse, received little notice until two political rallies just before election. His platform: a thorough investigation of plant activities in connection with the townsite in the belief that the companies "have not dealt fairly with the townspeople." Said he: BMI "must be made to help out with the financial burden."

When questioned regarding his reason for running for office, French said he wanted especially to find out why private citizens were unable to obtain lots or highway frontage in Henderson from BMI.

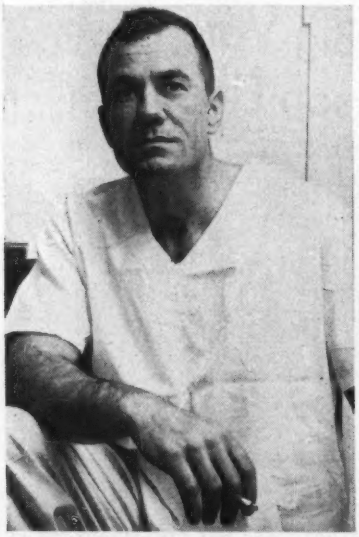
Meanwhile, a letter of intent drawn up by BMI pours fuel on the fire. Mayor French and the new city council must decide whether to accept or reject water distribution and sewage collection systems, a fire station and

* Last year five major companies at the Henderson plant site (Stauffer, U.S. Lime, Western Electrochemical, Titanium Metals, Pioche Manganese) formed BMI to purchase and operate the residual assets (*CW, Mar. 22, '52*).

Shortly afterward, the State of Nevada handed over title of the town to BMI.

fire-fighting equipment proffered by BMI. The official terms: for $1 a year for a 16-year period, Henderson would receive its sanitation needs, would get outright paid-up mortgages at the end of the period; a fire station, fire-fighting equipment would be tendered immediately, would be accompanied by an annual $81,000 contribution to help defray the $120,000 upkeep.

A Big Stick: There isn't an available lot in Henderson's business district today. All have been taken up with an option to obtain title from BMI. The company or individual applying for the lot is supposed to show plans for building within 30 days. Several of those holding lots, however, have obtained unexplained extensions, still show no sign of an intention to build. Suspecting specula-



MAYOR FRENCH: "Basic Management, Inc., must help with financial burden."

tion, French promises rapid investigation of these lots, points to his own lot-finding troubles as "highly revealing." His allegation: unable to find land for a house until he had filed for office, he was subsequently offered one by Julian Moore, manager of BMI; and shortly thereafter, he reports, he was approached by five chamber of commerce members, asked to withdraw from the mayoralty race. He made political capital of both offer and request at open, pre-election meetings.

Other plant-town bitterness seems to stem from twin kindred sources. BMI's purchase last year included all of the houses (993) in Henderson (as well as the plant). Many claim that their resale to residents considerably hiked the value, and some long-time residents who were not employed at one of the plants were evicted. New BMI housing within the past 18 months has doubled available buildings; and BMI has plans to construct some 660 more low-cost houses.

And There's Pollution: As far as air pollution is concerned, friction doesn't seem imminent under French's administration. It's not bad, especially in Henderson proper, but State Assemblyman Byrne used the problem in Pittman (down-wind of the plant) as a political football during the last session of the state legislature. BMI's Moore recalls few individual complaints, says no investigations by health authorities or others have been made.

Uphill Wage Race

Chemical wages last year, moved up by an average of 8¢/hour; this year, most of the new contracts call for increases in the neighborhood of 7¢; and next year—depending on the economic situation—unions will be asking either for another healthy wage boost, or a guaranteed annual wage, or both. As usual, the biggest industrial unions are blazing the trail, and chemical and other labor unions are scurrying to keep from falling too far behind. Employees in major automobile plants recently got a 5¢ pay rise as their "annual improvement factor," and certain skilled workers got additional increases. Adding in a cost-of-living increase makes an average wage rise of about 7¢/hour. The CIO Steelworkers managed to do even better, will next try to break the ice on the guaranteed annual wage program.

The rising trend in wages, including chemical wages, is supported by continued good business and a lofty rate of employment, with defense expenditures still high. This trend has run along unbroken since World War II, with substantial increases each year except in 1949, the only postwar year in which the cost of living dropped between January and December. In that year, the big-time unions turned to—and established generally—the employer-paid pension plan.

This week, CW sized up 25 recent labor contracts for chemical processing companies, noted these wage increases:

Amount of increase	*No. of companies*
0-3¢	4
4-6¢	7
7-9¢	7
10-14¢	5
15-20¢	2

In addition, four companies "froze" into basic wages from 4 to 9¢/hour of previous cost-of-living increases; two firms raised shift differential pay by 1 and 2¢/hour; and most of the agreements included various fringe benefits (such as additional paid holidays and longer vacations) estimated at up to 6¢/hour.

For larger companies, fringe benefits are becoming major expenditures. American Cyanamid recently declared that it will buy wider and increased medical insurance coverage for all employees, and Socony-Vacuum refinery employees now will have 10 paid holidays a year.

Rubber and oil labor negotiations will come to a head later this summer, possibly based on the new pattern set by the Steelworkers. Coal and railroad companies don't have their wage showdowns until Oct. 1. For the chemical industry, where plant-by-plant bargaining is the rule rather than the exception, it's open season on wage increases all the year around.

COMPANIES . . . .

Shell Oil Co., Los Angeles, is considering several locations for the site of its proposed new refinery. Heading the list: Anacortes, Wash., where Shell already owns or has options on enough land for the construction. Preliminary plans call for a refinery that would process about 50,000 bbls. (2 million gal.) of oil a day.

•

Kaiser Aluminum and Chemical Corp., Halethorpe, Md., has recommended Hackart Construction Co. Inc., New York City, for award of the general contract for the second phase of Kaiser's $9-million aluminum extrusion plant to be erected at Halethorpe. Hackart' bid: $2.6 million.

•

Two new Wisconsin corporations have been formed:

- Dairyland Chemical Products, Inc., Madison, Wis., has been incorporated with an authorized capital stock of 1,250 shares of common, no par value.
- Industrial Research Corp. has been formed, also in Madison, also with a capital stock of 1,250 shares of common of no par value.

•

The Carborundum Co. has joined with two South American concerns to form a new company in Brazil to manufacture and sell Carborundum products. The new enterprise will be called Carborundum S.A.; the Niagara Falls parent will hold controlling interest, will temporarily transfer personnel to Brazil while plant facilities at Vinhedo are getting in gear.

Vulcanization Accelerators

In the manufacture of thiuram sulfide type of accelerators as well as dimethyldithiocarbamic acid metal salts.

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Catalysts & Accelerators

As catalysts where alkaline conditions are required for polymerization.

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To improve affinity of cellulose acetate rayon for direct cotton dyes.

In the manufacture of long-chain quaternary ammonium compounds for use as softeners, lubricants, and water-proofing agents.

Leather

For use in unhairing hides.

Surface-active agents

In the manufacture of amide and sulfonated amide-type detergents and surface-active agents.

Polymerization Inhibitor

Inhibits polymerization of unsaturated hydrocarbons during distillation.

Used as a stabilizer for certain types of resins.

Used to reduce webbing of natural and synthetic rubber latexes during dipping operations.

Other Uses

In the manufacture of photographic chemicals, the explosive tetryl, amide-type plasticizers, and ion-exchange resins. Useful as activators for paint and varnish removers based on chlorinated hydrocarbons.

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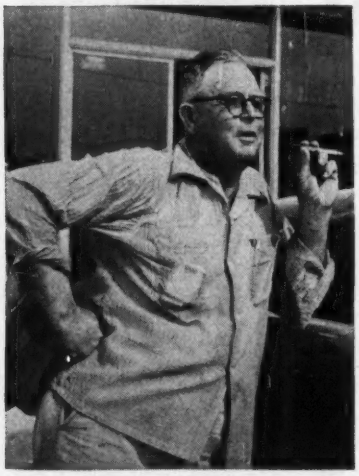
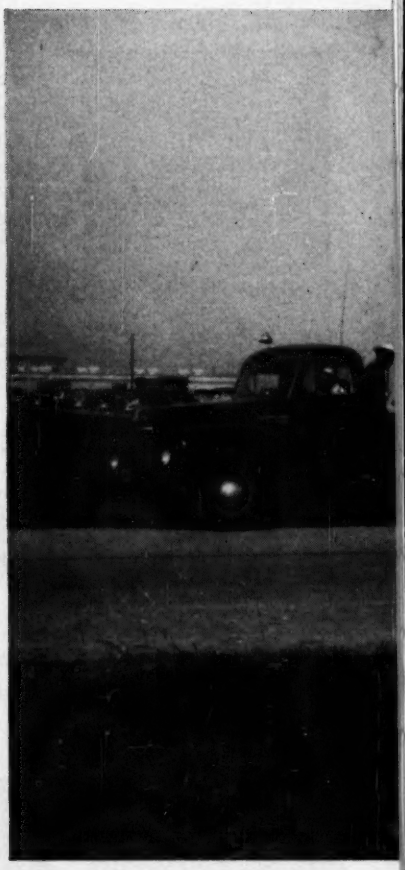
TAKING HIS EASE now but bullish on the future is store owner John Lance: "The new houses will need stoves, refrigerators, other appliances."



NEW MAYOR "YZ" Helms sees more water, better streets; expects Carbide's help on community center. Fisherman Thumann will sell more bait, more shrimp.



CHANGES ARE IN STORE for Seadrift's plant—requiring 4,000 men to build, 750 to

Small

SLEEPY SEADRIFT has awakened with a start. This week construction crews are hard at work, within a few months will complete Carbide and Carbon Chemicals' $60-million plant just a few miles north of the little (500 people) Texas fishing village.

On the Gulf, 25 miles from Victoria, Seadrift has jogged along leisurely since a post-World War I farming boom petered out a few years later. There's a railroad, but no passenger service; the local fisherfolk and cotton farmers haven't done enough business to attract a bank.

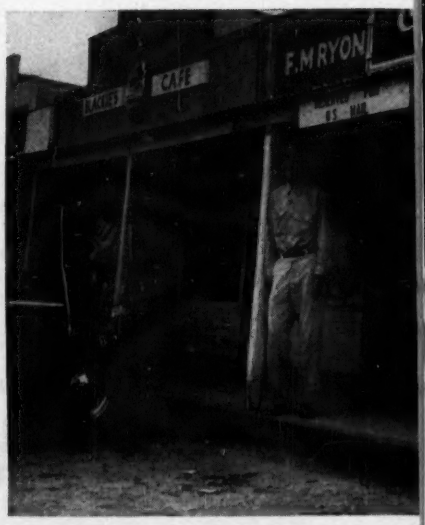
Seadrift, relatively content with its unhurried and unworried lot, didn't even seek greatness—greatness was thrust upon it. An enterprising Victoria banker sent brochures extolling the area to officials of all firms doing business in Texas; a Carbide man, intrigued by the advantages set forth, inquired at the bank, ended by buying a 1,550-acre plant site.

What's the impact of a $60-million tempest in a 500-population teapot? How does a small community cope with a 4,000-man construction force, with the prospect of 750 permanent employees? CW's Houston Bureau Chief Jim Lee (*talking to Bob Cadell, right*) drove down to Seadrift to find out. Here's his story:

Like a rural maid with a city swain, Seadrift citizens mingle suspicion and admiration, coyness and hope.

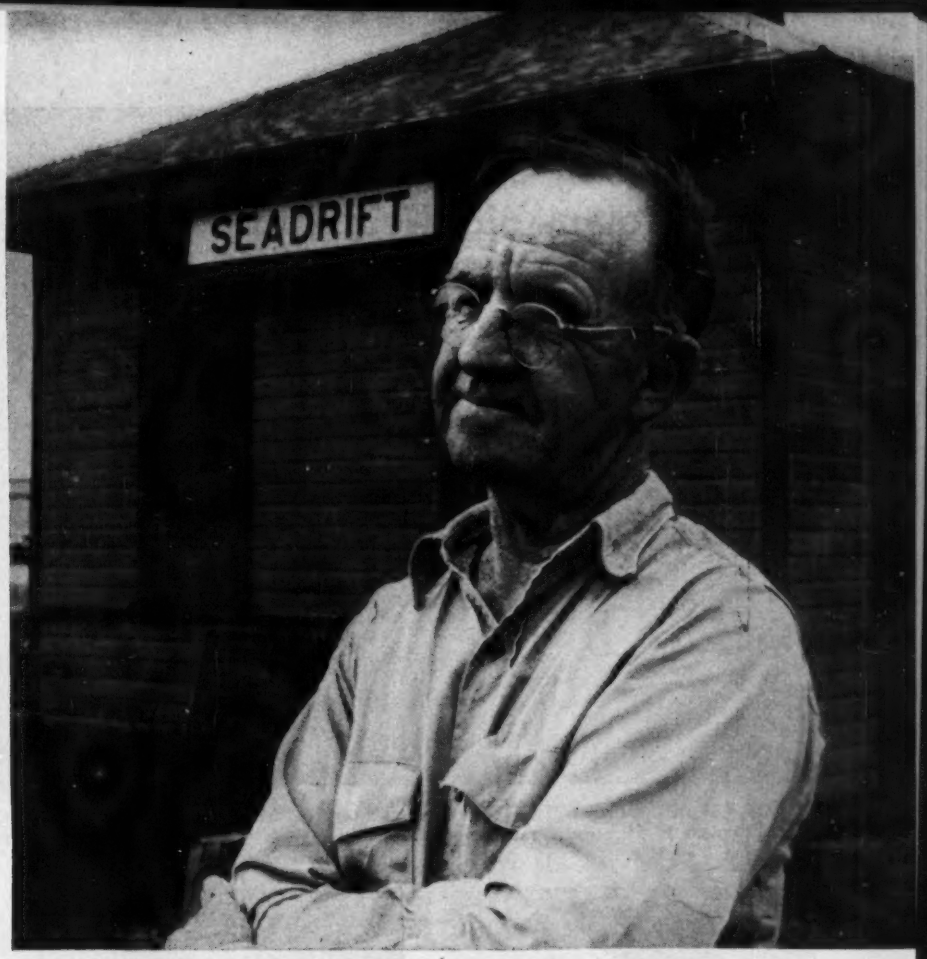
Town Marshal Burt Edwards expects "lots of traffic violations, more beer places . . . more trouble. If necessary, we will have to build a bigger jail." Constable Roy Creed agrees. Druggist Phil Ryon grumbles, "They haven't yet brought in the large number of workers they said they were going to."

And some, if not suspicious, are



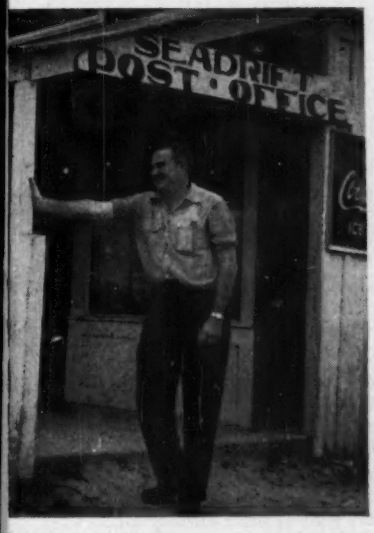
DRUG STORE proprietor Phillips Ryon is still they said they were going to bring in"; puts

00 citizens. You can't put a $60-million
n—near a town and not affect it.



BUT THE VILLAGERS haven't altered the old ways yet (except some have boosted prices to "strangers"). Freight Agent Rasmussen bemoans this attitude: "They're making a mistake."

Town, Big Neighbor

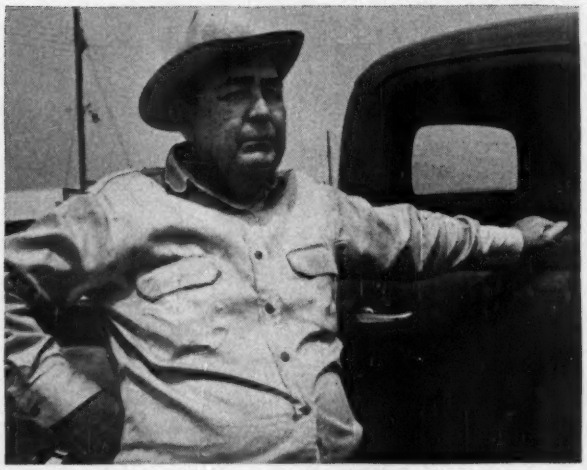


looking for the "large number of workers
town growth to date at about 100.

TO BID on new construction jobs, Robert Cadell resigned as mayor.

C. R. SIKES, however, is hanging onto his cotton acreage despite the land boom.

Small Town, Big Neighbor

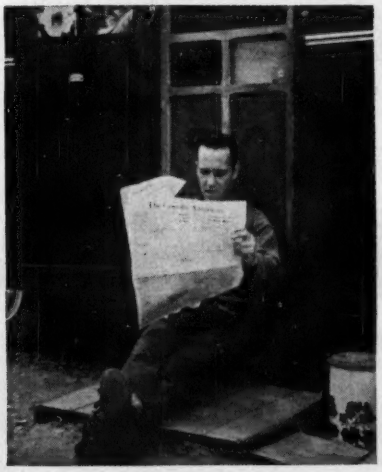


"A LOT OF BUILDING will be needed to take care of these people," opines Frank Strown, ranch worker.

THERE'S ONLY ROOM for one in Burt Edwards' lock-up. But of traffic violations, trouble as a result of more beer places, are

CONSTABLE ROY CREED vows enthusiasm for boom won't excuse speeders.

GRADE SCHOOL, now bursting at seams, girds for influx of new pupils.



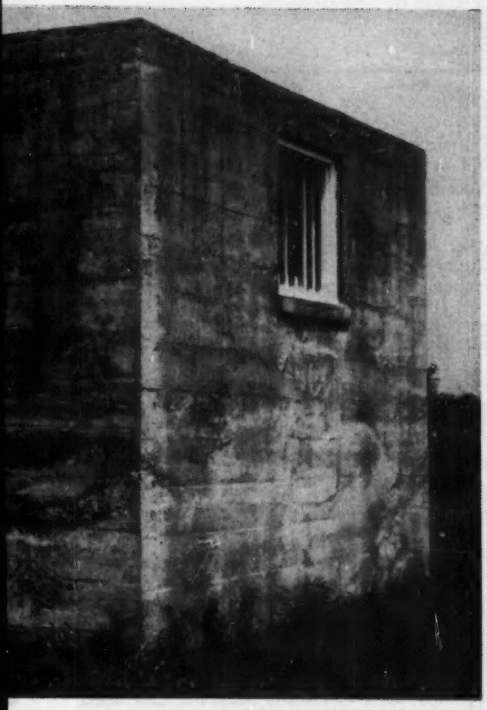
TALK of the big plant brought Jack Adrian to Seadrift. He got a job.

cagey. "There are a lot of people in this town who are making a mistake," says Oscar Rasmussen, Missouri Pacific freight agent. "They are raising prices of lots and other things to the new people too much. That isn't right." Corroborating that is Mayor (and shrimp boat operator) "YZ" Helms: "Some of the local people are holding property for higher prices."

Some of the old residents are emotionally tied to the placid past. "There's an element in this town that doesn't want to see changes," points out C. H. Gernhardt, movie theater owner. "Some people who have lots won't even sell them to strangers."

But countering this current of distrust is a spring tide of hope and welcome. The same Constable Creed who foresees speeding says, "This new boom is a wonderful thing. The town is sure to advance." Storekeeper John Lance's faith founded a new building, new fixtures. "All these new houses are going to need new stoves, refrigerators and other things." "Any boom will increase our machine shop business," says Welder Bill Cook. Ex-Mayor Bob Cadell, contractor and Assembly of God preacher, quit his civic job to bid on construction, finds his spiritual tasks are doubled with twice as many parishioners and plans for a new church.

The town faces problems—needs for new schools, a fire truck, more streets, more water. Carbide, too, has a job to do on community relations, especially with the grudging recalcitrants. But the obvious benefits of industry and the enterprising spirit of most local business leaders have already all but won the community's good will and best wishes.



the town marshal may need a bigger one if his fears well founded.

THEATER OWNER Gernhardt, looking for improved business; "some folks don't want any change."

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extra fast dry time (335°F D.P.)

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Example: **GLYCERINE!**

An important ingredient in cough medicines and similar pharmaceutical products is the demulcent. Manufacturers of leading cough remedies like Seeck & Kade's "Pertussin" and Pine Brothers Cough Drops rely on U. S. P. Glycerine to provide this soothing action.

If you're developing a new product that will contain a demulcent, be sure to check Glycerine.

New Detergent Aerosol

For example, a well-known drug manufacturer has developed a new detergent aerosol, containing Glycerine, which is reported to lessen respiratory difficulties in newborn babies. Glycerine and sodium bicarbonate act in synergy with the detergent. Together they create an alkaline medium for liquefying the mucus secretions which block the passage of air.

Balance of Properties

But Glycerine's demulcent action is only a small part of the story. You can count on *versatile* Glycerine to serve as—

humectant	lubricant
solvent	emollient
plasticizer	suspending agent
sweetener	chemical intermediate

In each of these uses, long-term evidence of Glycerine's safety and acceptability is on record.

Booklets on the application of Glycerine in the drug and cosmetic, food, protective coatings, and textile fields are available. For your copy, write Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine

Blast Chronology

April 16, 1947—Fire aboard French freighter S.S. Grandcamp at Texas City pier led to two days of explosions and fires; more than 500 killed, 3,000 injured, property damage estimated up to $70 million.

April 8, 1948—Monsanto started litigation by filing eight suits for damages, alleging that U.S. government was responsible for "negligence" in handling FGAN.

April 13, 1950—After seven-month trial, U.S. District Court in Houston upheld plaintiffs, ruled that U.S. was liable.

Dec. 7, 1951—Arguments began before U.S. Circuit Court in New Orleans on government's appeal.

June 10, 1952—Circuit Court reversed lower court's decision, held that U.S. government was not liable.

April 6, 1953—U.S. Supreme Court heard arguments on plaintiffs' appeal.

June 8, 1953—Supreme Court upheld Circuit Court's ruling that U.S. government is not liable.

Victims Unrequited

The U.S. Supreme Court has had its say on the subject, but the handling of fertilizer grade ammonium nitrate (FGAN) is likely to continue to be the topic of legal, legislative and administrative directives for years to come. Companies that make, ship and sell materials of this kind can expect to keep on hearing from governmental agencies concerned—and particularly now that the high court's decision indicates that it'll be easier to prevent explosions like the 1947 Texas City disaster than to collect on the damages.

More than six years after that explosion, the Supreme Court ruled last week that the U.S. government, which had manufactured the FGAN and was sending it to Europe under the foreign aid program, would not have to pay the $200 million claimed by companies and individuals that suffered losses in the Texas City holocaust. Among the claimants: Monsanto Chemical Co., asking $50 million for destruction of its waterfront styrene plant.

Split Decision: Another factor that may tend to keep the controversy alive is the narrow margin by which the government's victory squeezed through the Supreme Court. Out of the nine justices, four voted to absolve the government of responsibility; three took the opposite view; and two did not take part in the decision.

Associate Justice Stanley F. Reed, who delivered the majority opinion, said the claimants had failed to show any specific act of negligence on the part of the government. The dissenting opinion written by Associate Justice Robert H. Jackson asserted that the claims would have been approved by the court if the shipping had been done by and for private companies instead of for the federal government.

"The government, as landowner, as manufacturer, as shipper, as operator, is carrying on activities indistinguishable from those performed by private persons," Jackson declared.

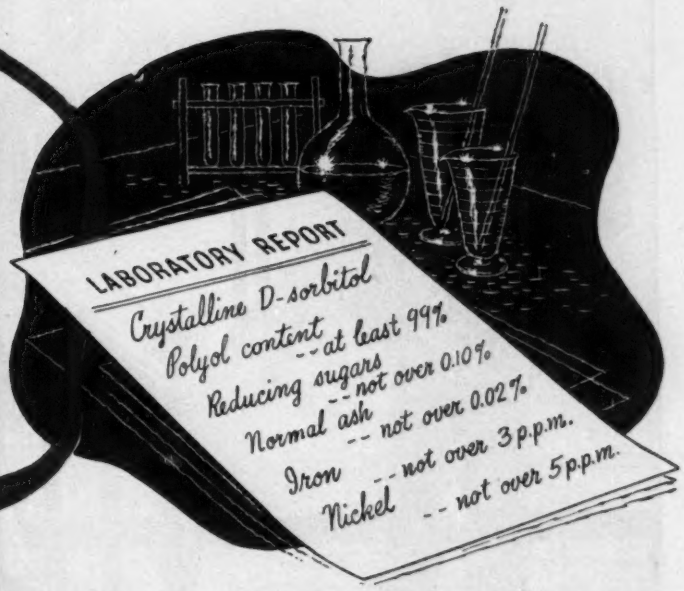
Nitrate Phobia: Concern about handling of FGAN and similar materials has been spreading since 1947. Promptly after the Texas City blast, the Interstate Commerce Commission amended its regulations on transportation of explosives and other dangerous articles, and the National Board of Fire Underwriters suggested 14 precautions in handling and shipping ammonium nitrate (*Chemical Industries, June '47*).

Then the Coast Guard and the Commerce Dept. set up an Interagency Committee on Ammonium Nitrate, and its recommendations have been put into new regulations for transportation of explosives on ships.

There was more alarm last winter when news came of explosions aboard the nitrate-laden Finnish freighter Tirrenia in the Red Sea. Longshoremen in New Orleans demanded double pay for unloading fertilizer, and the city's safety commissioner urged that ammonium sulfate nitrate and calcium ammonium nitrate be banned from the city's piers, along with FGAN (*CW, Feb. 14*).

Against such a background, port cities and maritime companies that may have overlooked this matter in the past can be expected to establish their own ordinances and rules in the near future. Firms that have property

BUY POLYOLS ON FACTS


LABORATORY REPORT
Crystalline D-sorbitol
Polyol content -- at least 99%
Reducing sugars -- not over 0.10%
Normal ash -- not over 0.02%
Iron -- not over 3 p.p.m.
Nickel -- not over 5 p.p.m.

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Write for this new booklet, "The Sorbitol Story", which highlights the reasons why sorbitol is a better polyol at a lower price.

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B & I . . . . . .

near the piers will be in favor of stringent regulations, and labor unions whose members make and handle these substances will be watching for possible violations.

Meanwhile, Monsanto* and the other claimants in the 273 separate actions stemming from the Texas City explosion will have to settle for whatever insurance coverage they may have had—unless Congress moves to make a special law providing compensation for the victims. Otherwise, the emphasis from here on out will be entirely on safety regulations.

Power Procrastination

Possible expansion of electrochemical production capacity in the Niagara Falls vicinity stays in the cobweb-covered blueprint stage while Congress defers its decision on various bills that would permit development of the area's latent hydroelectric power.

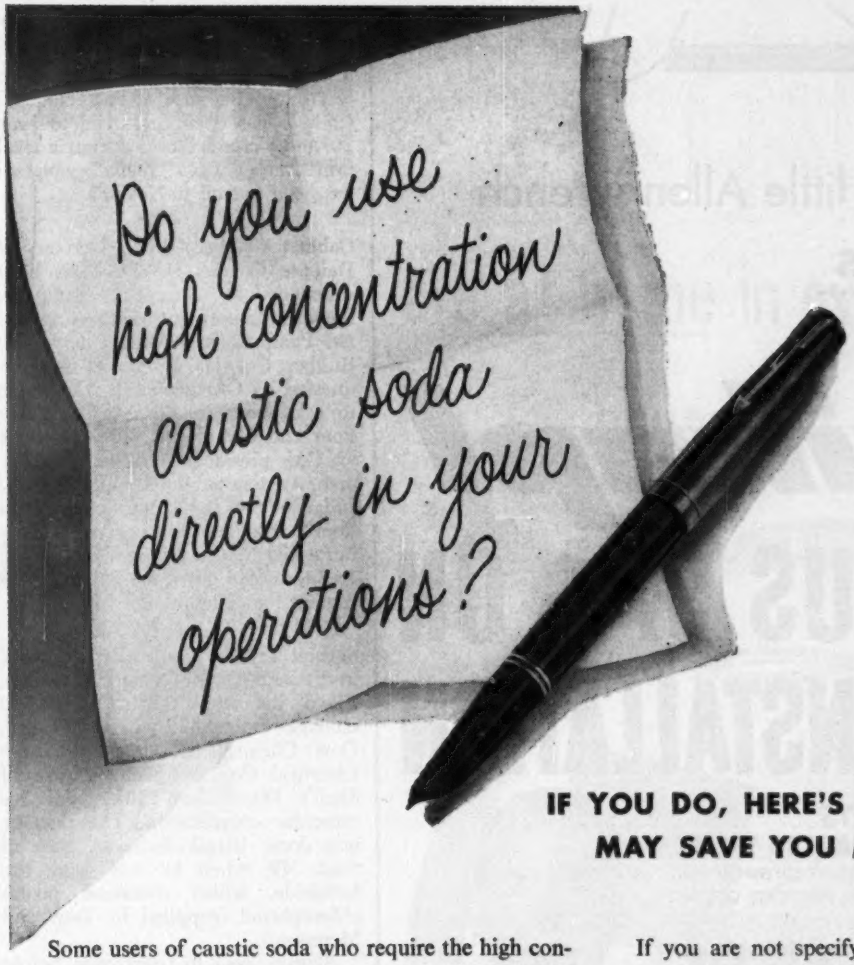
Representatives of agriculture, labor and business have endorsed the Capehart-Martin-Miller bill, which would allow five privately owned electric companies to pool their resources and build the proposed facilities—intakes, tunnels, power plant, and a storage reservoir that would prolong the scenic life of Niagara Falls by relieving the famous waterfall of "wear and tear" during the nighttime.

Washington observers say that this bill's chances of passage this year are slim, even if it's voted out of the House and Senate public works committees this month. Complicating the situation are two other bills, one that would authorize the federal government to build the plant and one that would give the job to New York's State Power Authority.

LEGAL . . . . . .

Judges Bow Out: Three law suits on alleged air pollution are pending in various courts at Louisville, Ky., with National Carbide in the denfendant's role in two of the cases. In that company's appeal of a $100 fine last March, two criminal court judges have disqualified themselves, and the state's chief justice will be asked to appoint a special judge. One judge ruled himself out because prior to his election he had been asked to serve as counsel in the case; another judge said he had "expressed an opinion on the

* While Monsanto went to considerable trouble and expense to tell the courts how bad the 1947 explosion was, it took time earlier this month to tell how trivial was a recent explosion in its new Texas City plant. Monsanto's press release told how one news service had sent out a preliminary report indicating that the 1953 blast was another big one, then had to follow with a correction stating that there was some property damage ($500) but no deaths or injuries.



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Some users of caustic soda who require the high concentration are accustomed to buying 50% NaOH liquor and then adding dry caustic to bring it up to needed strength.

Several of our customers have recently changed to buying the 73% concentration. They store and use it at full 73% strength. All have reported substantial savings on reduced volume cost and reduced man-hours.

If you are not specifying 73%, we believe it will pay you handsome dividends to investigate it.

Our technical staff will be happy to estimate the savings possible on any volume you may select. Just jot down in the block below a tonnage figure. Our engineers will figure out for you the cost of 73% liquor, vs. the cost of 50% liquor with the addition of dry caustic to bring it up to similar concentration.

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Gentlemen: For comparative purposes only, please estimate for me the cost equivalents of_____tons of 73% caustic soda.

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Firm_____

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plus.....

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SAVED US 37% ON PIPING INSTALLATION COSTS

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ASSISTANT SUPERINTENDENT
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"Acid condensate draining through existing galvanized lines was eating its way right through the pipe wall. We knew the remedy to be stainless steel, but shut-down was costly and the job difficult, since it was practically all overhead work and ran through three floors.

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urgency of getting some relief down there." A civil case against National Carbide has been continued to June 29, and a criminal case against a local firm accused of a "smoke" violation has been put off to Nov. 11.

•

Cabinet Member Called: Secretary of Defense Charles E.Wilson has been summoned to Chicago to testify in the government's antitrust suit against Du Pont, General Motors, and U.S. Rubber Co. The subpoena was requested by GM's counsel, who wants to ask about relations between Du Pont and GM during Wilson's terms as GM president and board chairman. Another subpoena authorized by Judge Walter J. LaBuy requires Du Pont to bring into court certain records requested by the Justice Department. LaBuy turned down the government's request for many other company files.

•

Second Try: In a suit filed last week in Federal District Court (Chicago), Floyd Blanski asked for $500,000 damages from Shell Chemical Corp., Dow Chemical Co., and Monsanto Chemical Co., charged that use of Shell's Weedkiller 130 ruined his muscular coordination. The damage was done, Blanski believes, back in Sept. '49, when he was using the herbicide, which contained pentachlorophenol (supplied by Dow and Monsanto).

Blanski went to court once before on the matter, and received $40,000 in workmen's compensation from his employer, Davey Tree Export Co. This would have to be returned to Davey should he win his case.

•

Labels Draw Fire: In two instances last week, the federal government cracked down on chemical specialty makers for allegedly making misleading statements about their products.

• The Federal Trade Commission published a cease-and-desist order banning use of certain claims by Bostwick Laboratories, maker of insecticides at Bridgeport, Conn. Proscribed statements include: that Super-Aerosol Insect Killer will kill all crawling insects in the treated premises; that its action is faster than that of other insecticides now on the market; and that Bostwick insecticides are harmless to humans, pets and plants—unless the last statement is followed by the provision, "when used according to directions."

• The U.S. District Attorney in Louisville, Ky., has brought suit asking for seizure of 30 bottles of a tonic that is billed as capable of helping to cure ulcers, coronary thrombosis and

NEVILLE RESINS

are at home in every-day household items

When the woman of the house applies a new coat of aluminum paint to a radiator, or walks on mastic or rubber floor tile, or steps down to the basement on rubber stair-treads . . . she unconsciously proves the worth of Neville Resins! For it's these modern resins that add long life and wear to countless every-day household items, to say nothing of extra beauty and sales appeal so necessary to the manufacturer of such products.

• *We will be glad to help you select the right Neville Resin for your particular production need.*

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You use porcelain to develop processes in the laboratory.

You don't have to search for substitute materials when you engineer the process to plant scale operation.

Use Lapp Chemical Porcelain. It is low in initial cost, high in serviceability... provides "laboratory purity," protects against corrosion and/or contamination.

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Lapp PROCESS EQUIPMENT

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B & I . . . . . .

other ailments. The petition says the tonic was made by Walton Laboratories, Marengo, Ill., and that the shipment included pamphlets that contain "false statements."

FOREIGN . . . . .

Acetone/Sweden: The Billerud Paper and Pulp Co. is starting production of acetone and alcohol in Sweden. Initial step: alcohol output of 500 tons/year. Currently, only one other company in Sweden is turning out acetone; imports add up to about 1,500 tons annually.

•

Natural Gas/Hungary, Rumania: Reports seeping from behind the Iron Curtain center on a chemical plant under construction in North-East Hungary in the region of the Tiszalök power project to process natural gas piped into Hungary from Rumania. The pipeline will be a joint project, will be built by a mixed Hungarian-Rumanian company also responsible for construction of a chemical plant at the Rumanian terminal. The Hungarian plant, started a year ago, will be solely built by Hungarians.

•

Smokeless Powder/Japan: The Asahi Chemical Industry Co. has signed a contract with the Japan Procurement Agency of the U.S. to supply 260,000, 155 mm. cylinders of smokeless powder. The 2,300 million yen ($6.4 million) order will be turned out at the former Army arsenal, Sakanoue, recently purchased by the company from the government.

•

Phthalic Anhydride/Brazil: Industria Quimica Productos Ftalicos will make phthalic anhydride in its Mogi des Cruzes plant, Brazil. Initial capacity: 30 tons/month. Output will be increased when the company brings in a phthalate plasticizer plant.

KEY CHANGES . . .

Victor Dykes: To president, Texas International Sulphur Co., Houston, Tex.

Paul W. Bachman: To vice-president, Davison Chemical Co., Baltimore, Md.

Harry B. McClure: To executive vice-president, Carbide and Carbon Chemicals Co., New York, N.Y.

C. W. Blount and **H. K. Intemann:** To vice-presidents, Bakelite Co., New York, N.Y.

D. J. C. Copps: To member of the board, Atlas Powder Co., Wilmington, Del.

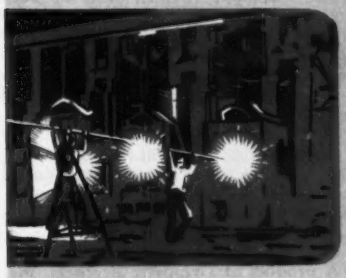
F. L. Whitney: To chief engineer, Walter Kidde Constructors, Inc., New York, N.Y.

Now you can make your own

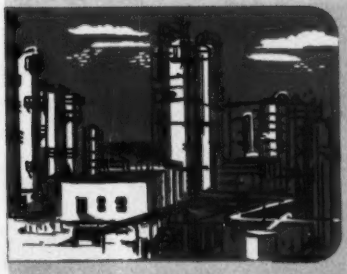
High-Purity OXYGEN and NITROGEN

simultaneously — with ONE Generator

Steel Scarfing



Metallurgical

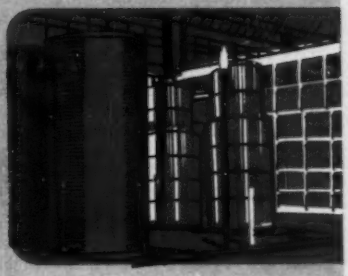


Chemical-Petroleum

OXYGEN

NITROGEN

Heat Treating



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★ Assured supply at less cost

★ Both products from one generator

★ Use one raw material: the free air

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★ Safe, simple—easy to operate

Slash costs of inert gas—*while* you cut costs of high-purity oxygen! Make *both* in your own plant with *one* Air Products Generator. Standard *High-Purity* models are available with oxygen capacities from 2500 to 12,000 cubic feet per hour—nitrogen capacities from 4000 to 36,000 cubic feet per hour. *Liquid* oxygen and nitrogen if desired. Also *Tonnage* Generators in standard models, or of special design. Capacities *unlimited!* Write us your requirements, and send for our CATALOG.

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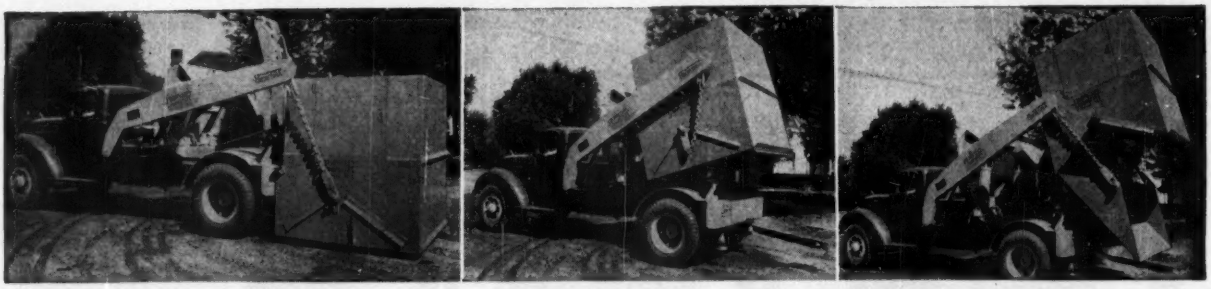
Suppose we put the Dempster-Dumpster System right down in your plant . . . then what?



● *Well First—let's make it clear that we are furnishing you with several sizes of different designs of 26 containers to suit your materials requirements. Then bear in mind that we are delivering you only one truck-mounted Dempster-Dumpster and with your driver this one outfit picks-up, hauls and dumps all containers, about like the one shown above.*

Now, how many conventional trucks are you using for handling rubbish, scrap, raw materials, and what have you?

For several years now, one plant has been doing considerably more work with two Dempster-Dumpsters and two men than they did with five trucks and fifteen men before the Dempster-Dumpster System was installed. You can guess at the approximate savings annually.

A glance at the picture below and you get the whole story of the Dempster-Dumpster System. Never before have you been able to cut bulk materials handling costs so drastically.

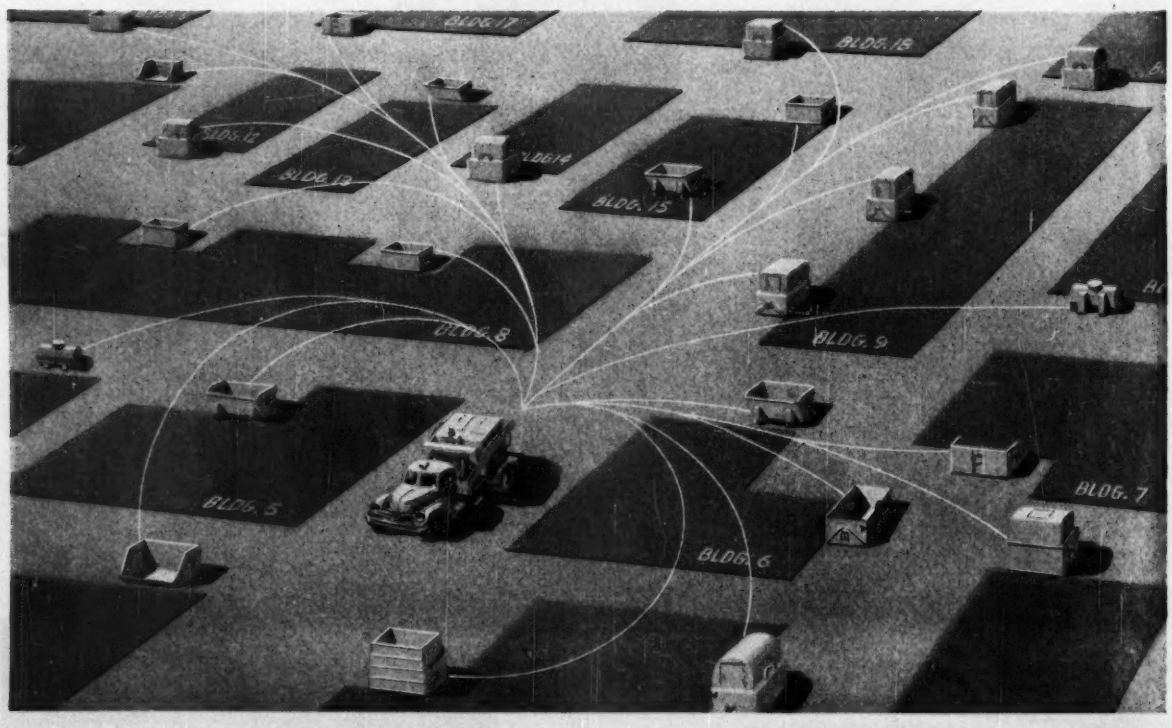
One truck mounted Dempster-Dumpster handles the entire group of 26 Dempster-Dumpster containers. These big, detachable steel containers are like having 26 truck bodies for a single truck.

Any required number of Dempster-Dumpster containers are spotted at convenient materials accumulation points inside and outside your buildings. They range in sizes up to 12 cu. yds.—3 to 4 times the capacity of a regular dump truck. Materials—bulky, light, heavy, solids, rubbish and even liquids—are dumped or placed into these containers.

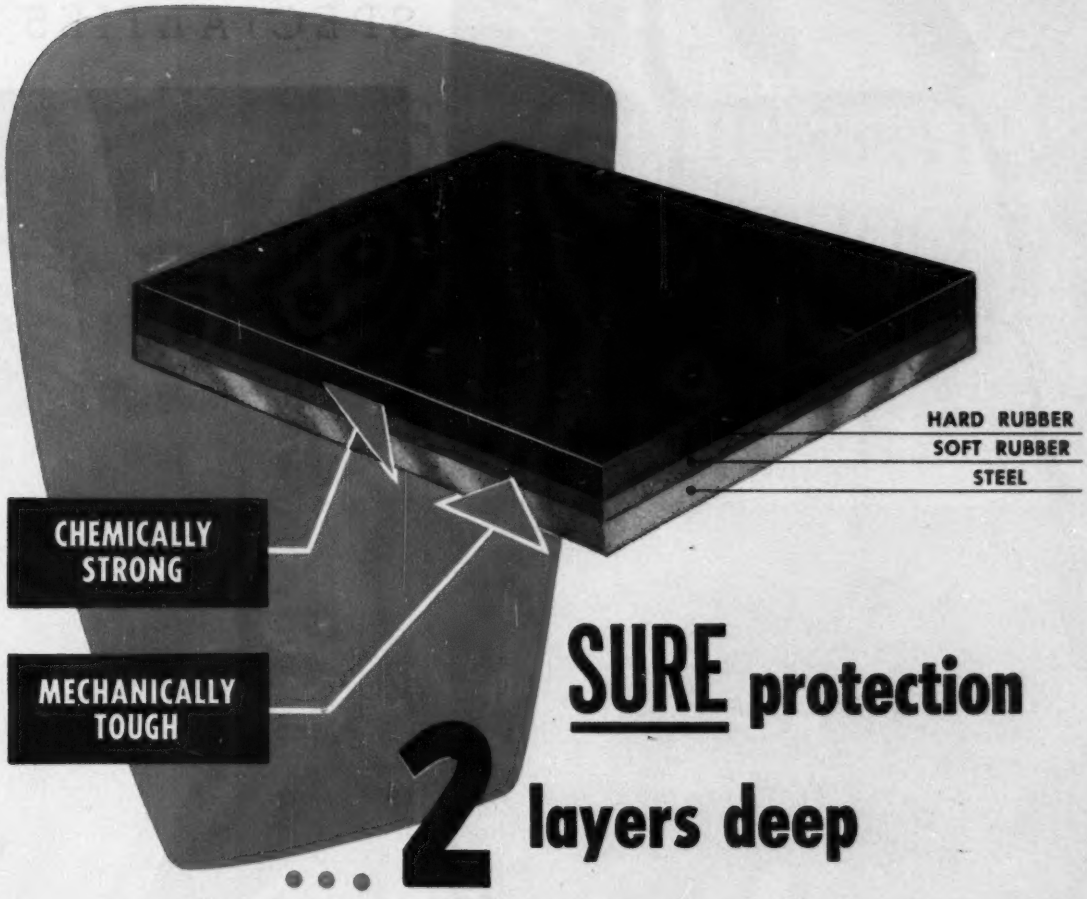
The truck mounted Dempster-Dumpster makes scheduled rounds, picks up each preloaded container, carries it to the point of disposal, sets it down intact or dumps the materials and returns the container for refilling. The entire operation is hydraulically controlled and handled by your truck driver.

It's as simple as we have described it. The amazing thing is the tremendous savings being made by the Dempster-Dumpster System in hundreds of leading industrial plants over the nation.

A product of Dempster Brothers, Inc.



DEMPSTER BROTHERS, 263 Dempster Bldg., Knoxville 17, Tenn.



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The only surface exposed to corrosives in an ACE hard rubber lined tank or pipe is the top layer of smooth, age-proof hard rubber — resistant to almost every acid, alkali, and corrosive salt. Underneath is a layer of shock-resistant soft rubber that firmly bonds the hard rubber to the steel — a bond so strong the rubber can't be peeled off, and won't loosen or blister. There's extra protection at the seams, and in the well-rounded fillets and corners. Flanges, too, are rubber faced. It's details like these that make one tank last longer than another — that make ACE rubber-protected equipment the finest you can buy.

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In addition to hard rubber and rubber-lined tanks, valves, pipe, molded parts, etc., we also offer corrosion-resistant equipment of many plastics such as Saran and Parian. We'll be glad to recommend the *one best* material for your job.

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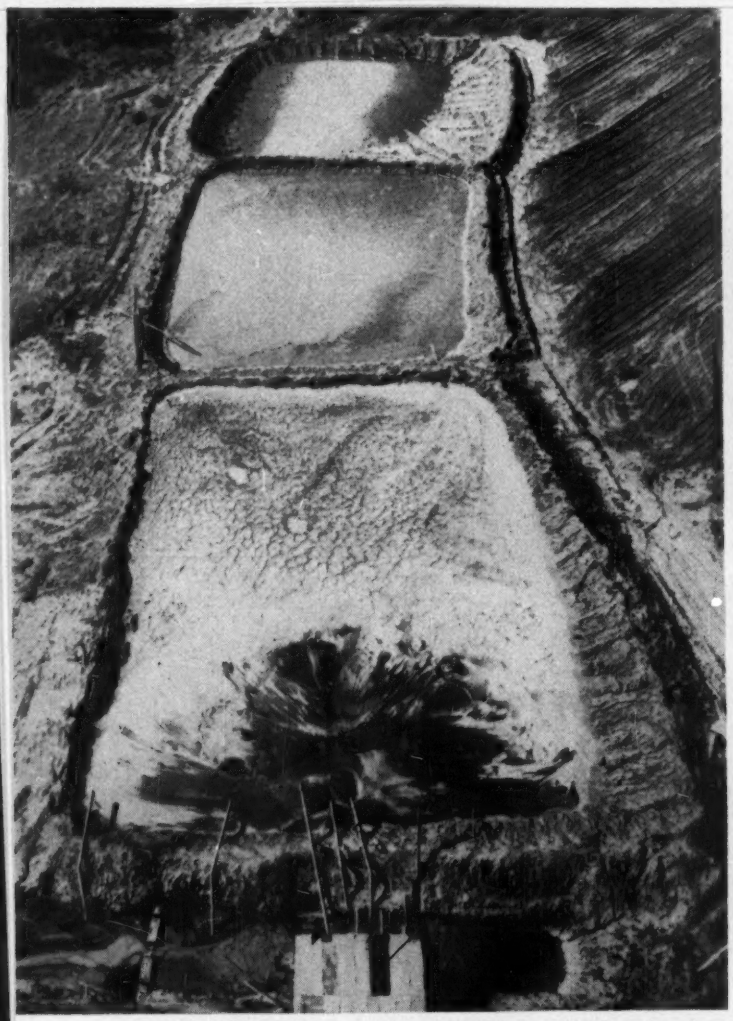


1 MUD PITS hold reserve water (top), dried mud and cuttings from well (bottom), and supply of water-based mud for lubricating drill.

2 THINNING MUD with tannins and caustic soda produces alkaline mud, improves wall-building.

3 HUMIC ACIDS, calcium lignosulfate, act like tannins, need less lye.

Drilling Muds: Greasers for Gushers

Mud, over a million dollars' worth of it, helped drill the nearly 900 wells brought in last week to help slake America's thirst for oil. And by the time the year's out, between $75 and $90 million worth of the specially compounded muds will be pumped into the drill holes of the industry-predicted 46,900 wells.

Principal ingredient in these muds —other than water—is a weighting material, barium sulfate, estimated to make up about 65% of drilling mud cost. But wells also swallow quantities of clays, lime, caustic soda, soda ash, phosphates, leather flock, and a host of other products.

Flush and Chips: Pumped down the drill stem, out the bit, and up again to the surface, the muds serve primarily to cool the spinning bit and flush out chips and cuttings. They do far more than that, however—help prevent caving of the well walls, control gas and oil pressure (weight of the fluid prevents "blowouts"), lubricate and check corrosion.

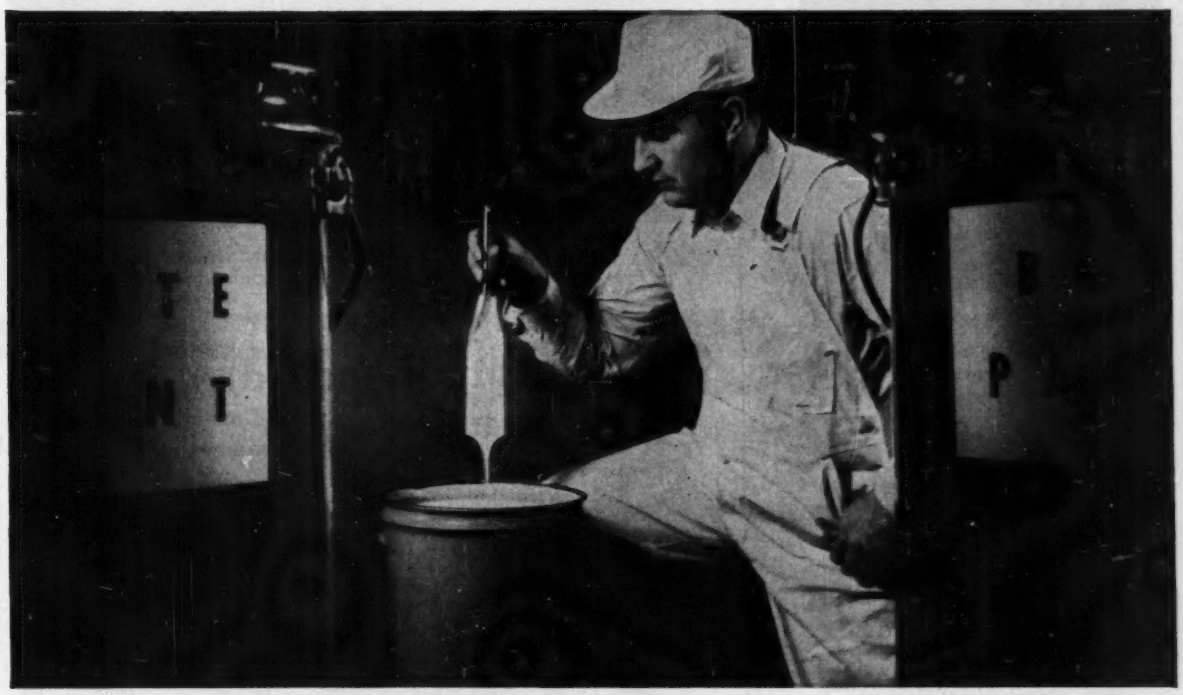
In the past 25 years, several basic types of drilling muds have been evolved. Commonest types are water-based, and these are of several sorts. There are fresh- and salt-water muds, and gaining in acceptance are oil-in-water emulsions (emulsion produced by use of special soaps).

Oil-based drilling fluids—sometimes employing crude oils, other times refined oils—have become fairly common in California; there are water-in-oil types also. Proponents of the oil-base muds claim faster drilling and increased production from wells. But they're dirtier than water-base muds, cost more, and are probably used in

DOW

IMPROVED SUSPENSIONS ARE NOW ASSURED BY METHOCEL

The effective suspending action of DOW methylcellulose has been proved in water paints . . . may help your product, too



SEND FOR YOUR EXPERIMENTAL SAMPLE!

THE DOW CHEMICAL COMPANY
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Wide viscosity range of Methocel is available—

please indicate use field_____

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Water-based paints produced with Methocel® (Dow methylcellulose) can be made ready for use in minutes . . . a result of this synthetic gum's action as a suspending agent and emulsion stabilizer. The value of Methocel's suspending action extends to many other applications, including latexes, food flavors, cosmetics and chemicals.

The effective thickening, binding, film-forming and stabilizing action of Methocel have also solved many problems of manufacturing economy and simplification. Offering you a greater range of viscosity than any other gum, Methocel is available in nine types from 10 cps to 7,000 cps. Five grades of this water-soluble gum are available, including N. F. Grade for food, pharmaceuticals and other applications requiring high purity.

Proved superior to other natural and synthetic gums, Methocel calls for your immediate investigation. Write for your sample and comprehensive information from THE DOW CHEMICAL COMPANY, Midland, Michigan.

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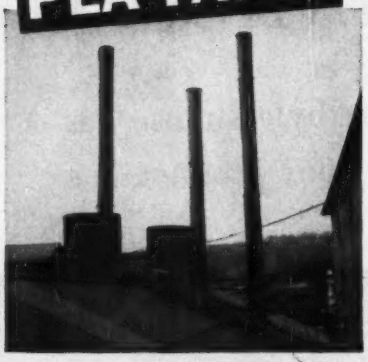
DOW

FUME STACKS of PLA-TANK®



Day by day, more and more PLA-TANK Stacks go to work helping to solve corrosion problems.

PLA-TANK STACKS
are manufactured from long-life resin-bonded glass fiber.

PLA-TANK STACKS
are resistant to a wide variety of fumes and temperatures. Not affected by extremes in weather.

PLA-TANK STACKS
are light in weight, relieve danger of collapsing and sagging roofs; need less support. Save on handling, freight and shipping charges.

PLA-TANK STACKS
are easy to install, require less rigging.

PLA-TANK STACKS
are competitively priced with other corrosion-resistant materials.

PLA-TANK STACKS
are available now in diameters to 54".

PLA-TANK STACKS
are the answer to your needs for many fume exhaust jobs now on your drawing boards or for replacements in existing systems.

Write for free data file sheet

P-11

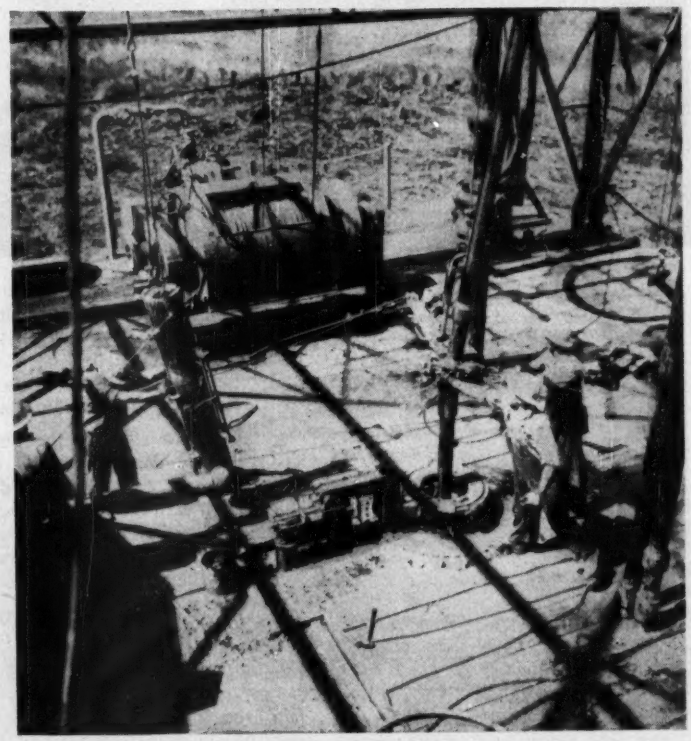
THE Chemical CORPORATION
64 Waltham Avenue Springfield 9, Mass.

4 VISCOSITY CHECK is made by noting time required for 500 ml. of mud to drain from funnel. If too thin, weighting materials are added.

Story Begins on Page 32

Drilling Muds (cont'd)

Continued on Page 36



5 MUD GUSHER spouts from disconnected stand of pipe on powerful steam rig. Needs for mud in '53: $75-90 million.

anyway you LOOK *at it!*

PETRO - CHEM ISO - FLOW FURNACES

are most efficient by any comparison!

maximum fuel efficiency

low maintenance

low pressure drop

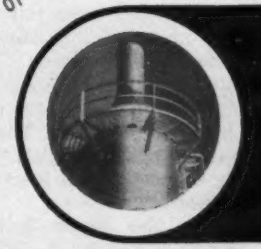
minimum ground space

better heat distribution

simplicity of design and construction

The generic design of ISO-FLOW heaters, including the reradiating cone, gives excellent heat distribution, eliminating localized overheating. Further, all walls are protected by tubes which create low wall temperatures. The walls have high insulating characteristics which create minimum outside shell temperatures, and, hence, extremely low radiation. With a radiation loss of under 2%, more heat is absorbed by the fluid being heated, resulting in higher efficiency for any type of Iso-Flow design. Since Petro-Chem has a wide variety of convection sections, all heaters can be designed for optimum fuel efficiency or for maximum fuel efficiency where the price of fuel and other economic considerations justify.

More than 1100 are in operation throughout the world in the petroleum, chemical and allied industries . . . for all processes and for any duty, pressure, temperature and efficiency . . . and all Petro-Chem Iso-Flow Furnaces are pre-eminently satisfactory.



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no more than 1% of current U.S. drilling.

Heavy Water: Barium sulfate (barytes), prime ingredient in muds, is employed largely because it is an effective weighting agent—fluids made with it can hold down a heavy pressure of gas or oil which might otherwise blast out through the drill hole. Demand for the agent, mined chiefly in Arkansas and Arizona, has outstripped supply, and by the end of this year imports will likely average 15,000 tons per month.

The other top ingredient in muds is high-grade colloidal clay; bentonite is most commonly used. Estimates put consumption of bentonite for rotary oil well drilling at about 400,000 tons per year.

Chemical additives provide specific solutions to problems. Caustic soda, for example, boosts the alkalinity of fluids, and prevents micro-organism growth. When the bit starts through gypsum, the fluid is contaminated—and sodium carbonate is used to treat it. Shale drilling frequently demands lime, and where cement plugs are bored out, sodium and barium carbonates are incorporated in the muds.

Phosphates— ortho, disodium and crystalline polyphosphates—are mixed in to treat certain contaminated fluids, or where high drilling temperatures are encountered (sodium tripoly is particularly effective in such cases of high-temperature drilling).

Thinner Winners: Quebracho extracts (tannins) find wide application in improving viscosity of muds. In recent years many substitutes for this imported extract have come into use —lignosulfonates (paper manufacturing by-product), and lignitic products (humic acids). All these thinners are generally used with caustic soda, and the lignitics are said to require less of the caustic.

Loose, fibrous compounds are used to prevent water loss. Wood fibers, cottonseed hulls, leather flocking and expanded perlite are typical products. And for the most part, oil-base muds require much the same additives as the water-base muds.

On the Spot: The weighting materials and other additives are generally sold in multiwall paper bags so that the specially required mud can be mixed at the well—a vital service of the supplier. Exceptions are the oil-base muds, which are generally premixed and hauled to the well in tank trucks. Even these may be modified at the well.

Cost of a barrel of the specialized muds varies widely—from about 50¢ up to as much as $20 for high density, specially compounded muds. Oil-base muds are generally somewhat more expensive—run $10-12 per barrel at the well, although sometimes more. Most drillers figure the oil-muds average about $8 more per barrel than the water-muds.

Top factors in supplying these mud additives are Baroid Sales Div. (National Lead Co.) and Magcobar (Magnet Cove Barium Corp., subsidiary of Dresser Industries) both in Houston, Tex. They garner an estimated 85-90% of the business. The remaining sales are divided among firms like Milwhite Co. (Houston), Mud Control Laboratories and Indian Mud Co. (both at Oklahoma City) and Weyerhaeuser Timber Co. (Longview, Wash.).

Meeting the market for an estimated $3-5 million in oil-base muds are Oil Base, Inc. (Compton, Calif.), Ken Corp. (Los Angeles), and Magcobar. Baroid will probably join them shortly. Right now, Oil Base has an estimated 80% of the business with Ken and Magcobar fighting over the remainder.

Most firms figure that the drilling mud business in this country has pretty nearly stabilized; they don't look for much expansion in markets. But there's plenty of drilling overseas; and though foreign firms are currently providing most of the muds there, American suppliers have an eye on enlarging their export sales.

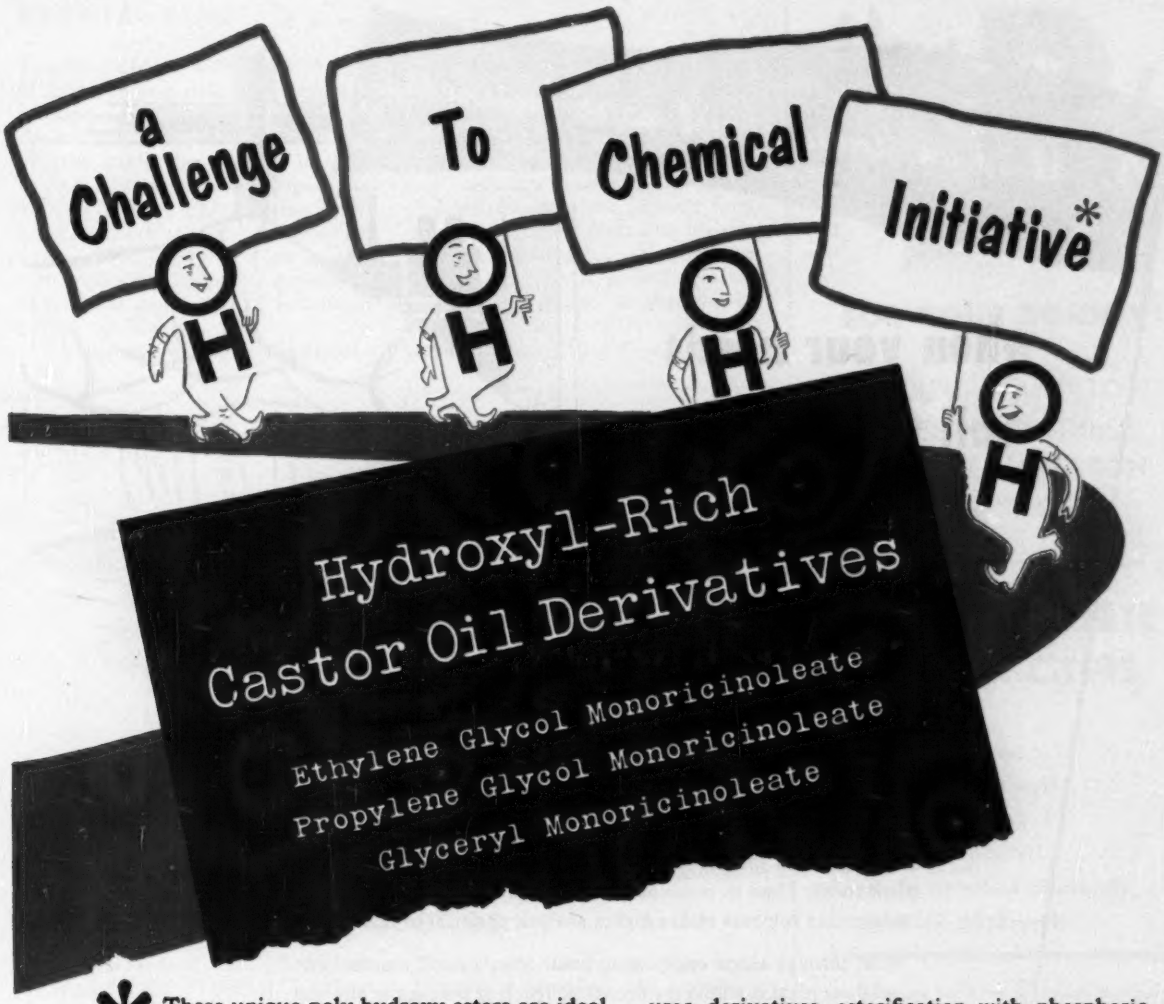
Eye on the Target

Vapor barrier, fire retardant, insulator —you've got all three in Flamemastic, crows Ideal Chemical Products, Inc. (Culver City, Cal.) about its industrial coating.

Originally worked out as a thermal insulator for hot oil tanks, the acid- and alkali-resistant mastic is currently finding major utilization as a vapor barrier and flameproofing coating for the interior of grain elevators. Flamemastic coatings over cork and glass fiber insulation are also turning up in cold storage houses—again as vapor barriers.

But Ideal's President A. M. Shenk figures that a raft of other applications will multiply the demand for Flamemastic, has a favorite test to demonstrate his product's flame-retardant and insulating qualities: Thermite is ignited on a ⅛-inch plate of steel, and on another ⅜-inch plate with a ½-inch coat of the mastic. The Thermite burns through bare plate in 20 seconds; the coated plate is scarcely more than warmed.

Shenk also figures he's got the



* These unique poly-hydroxy esters are ideal starting points for synthetic conversion. Possible reactions of these multi-hydroxy esters are sulfation, acylation, iso-cyanate coupling, acetalization. oxidation, amination, condensation with urea derivatives, esterification with phosphoric acid.

The presence of the polar hydroxyl group suggests their use as surfactants, cellulosic plasticizers, dye carriers, lubricants, and cosmetic ingredients.

POLY-HYDROXY ESTERS	HYDROXYL VALUE
Ethylene Glycol Monoricinoleate	260
Flexricin® 9 (Propylene Glycol Monoricinoleate)	288
Flexricin® 13 (Glyceryl Monoricinoleate)	304

Send for samples and property sheets of these derivatives..

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CW-63

Please send samples and property sheets

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when your needs call for

Out of the progress and growth going on in the fertilizer industry has come the demand for higher analysis mixes. There is a practical limit to the amount of plant food nitrogen that can be obtained from liquid sources. Ammonium sulphate, as a solid source of nitrogen, fills the gap in providing nitrogen for high analysis plant foods. Used in combination with liquid sources of nitrogen, ammonium sulphate makes higher analysis practical to manufacture.

Now, through Harte engineering know-how, a small ammonium sulphate plant is within the economic reach of practically any size fertilizer plant. The ammonium sulphate needs of an average size fertilizer plant can be supplied under such conditions that profits usually can amortize the investment within one year.

The Harte System of complete engineering gives you an experienced, balanced staff of engineering specialists who are well prepared to handle your ammonium sulphate plant efficiently and reasonably. Let one of the Harte representatives show you how Harte resources and experience in the fertilizer industry can help you. There is no obligation.

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TARGET problems (*CW, Feb. 7, 21*) of flameproofing railroad trestles and building jet airfields whipped, but doesn't stop there. Flamemastic with cuprous oxide, he says, is an antifouling compound for ships. And bonded on steel, Shenk claims it will resist the shock of raising temperatures from —60 to 4000 F in a few seconds —an application important in construction of the motor unit of rocket-propelled missiles.

Up against stiff competition from a number of other mastics producers Ideal won't reveal the precise composition of its coating. Best bet: a chlorinated rubber (like Hercules' Parlon) with a low thermal conductivity filler (e.g., asbestos, diatomaceous earth) plus a flame-retardant pigment (antimony, bismuth oxides). The material is priced at $4 per gal.; 4½ gals. cover 100 sq. ft. with a ⅛-inch coating. On metal, a primer is required for bonding. Mildew- and fungusproofing agents can be added if needed, and

Mastering Maybeetles

INSECTICIDE DUSTING was tried in the Frankfurt, Germany, area last month to combat swarms of *Maikaefer*, or cockchafer. The hard-shelled cockchafer (or Maybeetle, similar to our June bug) comes out in hordes on spring evenings, devours leaves and shoots. The Merck Chemical plant at Darmstadt supplied the insecticide, and brought over an American dusting machine to apply it.

Effectiveness of the insecticide can be judged from the kill of pests littering Hessische Ried, south of Frankfurt (*below*).

New B's

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YOU'LL WANT TO INVESTIGATE THESE NEW TRONA BORON CHEMICALS

1. BORON ACETATE
2. BORON ESTERS
   - (a) Tricresyl
   - (b) Tricyclohexyl
   - (c) Tri (methylamyl)
   - (d) Tri-n-dodecyl
   - (e) Tri (tetradecyl)
   - (f) Tri (tetrahydrofurfuryl)
   - (g) Tri (2-ethylhexyl)

These are but a few of the new products from Trona's continuing research into BORON and its important derivatives. For further information, samples, prices and technical data use coupon below.

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Aerosol Products
point up popularity of this

Now on Market

modern method of packaging

"FREON" PROPELLENTS ARE KEY TO THEIR SUCCESS

Ever since aerosol (pressure-packed) products appeared on the market shortly after World War II, aerosol sales have steadily boomed. At first, only insecticidal aerosols were available. But the aerosol method of dispensing quickly took hold and many new aerosols were soon introduced. The buying public approved them, and it is estimated that approximately 70 to 80 million aerosols were packaged in 1952.

TODAY, the list includes dozens of aerosol-packed products:

Adhesive sprays	Hosiery run preventives	Shampoos
Anti-static sprays	Ignition waterproofers	Shaving creams
Artificial snow	Industrial belt dressings	Shoe polish (foam)
Athlete's foot preventives	Insecticides	Space deodorants
Bactericides	Insect repellents	Spot removers
Burn preparations	Lubricants and rust preventives	Stenciling inks
Cold preventives	Mold-release lubricants	Suede refinishers
Colognes and perfumes	Mothproofers	Suntan oils
Dust mop spray	Paints, lacquers, enamels	Topical anesthetics
Fabric refinishers	Personal deodorants	Upholstery cleaners
Fungicides	Pet sprays	Waterproofing liquids
Fur lusterizers	Plastic sprays	Weed killers
Hair dressings	Rug cleaners	Window cleaners

For six consecutive years Du Pont has conducted a study of dealer and consumer reactions to this modern method of pressure packaging. Each study has shown that all types of aerosol products are gaining in popularity and that more and more dealers are stocking them. A digest of the latest survey report will be sent free upon request. It highlights many pertinent details about this market.

An important factor in the success of practically all pressure-packed products is the use of Du Pont "Freon" propellents. These are the inert ingredients that dispense the contents of the package. There is a "Freon" propellent designed to dispense almost every kind of product, whether of foam or spray type. These propellents are safe . . . nonflammable, nonexplosive, virtually nontoxic and they are produced by laboratory-controlled methods of manufacture that further insure the satisfactory operation of the aerosol product.

Call on us for assistance if you are considering pressure packaging one or more of your own products. Address: E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Div., Wilmington 98, Delaware.

DU PONT "FREON"

KINETIC

SAFE PROPELLENTS

"Freon" is Du Pont's registered trade-mark for its fluorinated hydrocarbon propellents.

DU PONT

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. . . THROUGH CHEMISTRY

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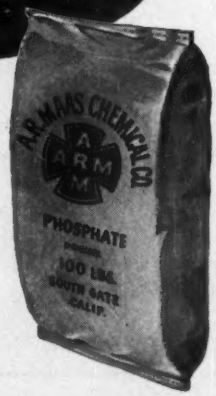
ARMOFOS (TRIPOLY)
TRISODIUM PHOSPHATE
SODIUM ACID PYROPHOSPHATE



Consistent uniformity of end product is essential to keep consumer markets. Maas consistent quality phosphates are always dependable, produced in the west by the west's oldest and largest phosphate producer. Each batch is tested for uniformity to insure uniformity in your end products.

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Division of Victor Chemical Works
4570 Ardine Street, South Gate, Calif.

SPECIALTIES . . . .

several colors of Flamemastic are available.

Eyes East: Ideal is currently turning out about 20,000 gals. of the mastic per month. Bulk and weight of the material—a cubic foot weighs 89 lbs.—make for high shipping costs; Ideal is considering factories in the Midwest and East.

These probably wouldn't be devoted entirely to Flamemastic, however. Ideal also produces a number of products, including a fire-retardant admixture for paints, fabric fireproofing compounds, metal protectives, nonbaking vinyl metal finishes, and Christmas tree flame protectant.

Founded in 1942 to make fire-retardant materials for the military, the firm has expanded its researches on products to reduce fire hazards. Flamemastic was developed in 1950, and since the war, the firm has concentrated on products for civilian markets.

•

Polyethylene Printing: A recent patent granted to Du Pont tells of a method for printing on polyethylene surfaces. As described in U.S. Patent 2,639,998, the ink is a 40% emulsion containing 80 parts by weight of a chlorosulfonated polymer of ethylene (Hypalon) and 20 parts by weight of a liquid phenolic resin which has been diluted with water to a solids content of about 20%. The ink is pigmented with about 40 parts by weight of titanium dioxide. After the ink has been applied, it is heated at 65 C until the ink is fixed to the surface.

•

Flame Away: Diamond Alkali Co. (Cleveland) has received a patent (U.S. 2,640,000) for a new flameproofing composition: a nonhalogenated inorganic flame retardant in a cellulosic base, to be coated with a resinous, organic film which contains a chlorinated flame retardant.

•

Bouncing Pavement: Carefully explaining that it's still too early to draw final conclusions, Virginia state highway engineers say that "rubber" roads —made with asphalt and rubber—are "no better, no worse" than conventional roads. Although it will require three more years before tests on its two 2,000-ft. stretches are complete, indications are that the more expensive rubber pavement is no better than concrete or asphalt.

•

Scholle Shifts: Scholle Chemical Corp., resin and bulk chemical maker, will move from its Chicago plant to a 23,000-sq.-ft. plant near North Lake, Ill.

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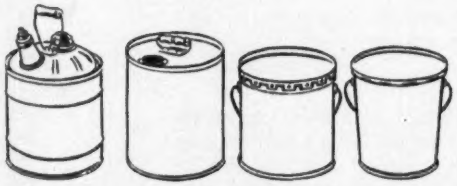
No two steel container users have exactly the same problems. From long experience we have built up a list of package services that our customers have found helpful. We'd like a chance to hand-tailor these services to *your* particular requirements.



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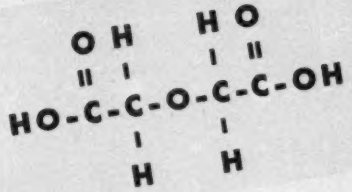

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Concentration Wt. %	pH at 25°C.
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1	1.9
2	1.7
3	1.6
5	1.5
10	1.4

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Why not investigate the use of Du Pont Diglycolic Acid in your business? We'll be glad to send you more information on this versatile, economical dibasic acid—specifications, properties, suggested uses, etc. Just clip the coupon below, or write on your letterhead to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware.

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Please send me more information about Du Pont Diglycolic Acid—specifications, chemical and physical properties, suggested uses, bibliography, etc. I am interested in evaluating Diglycolic Acid for the following applications:

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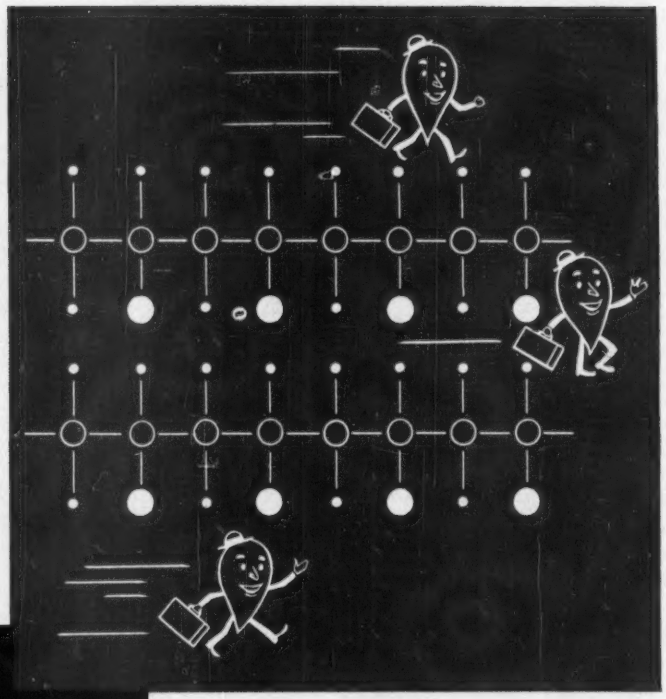

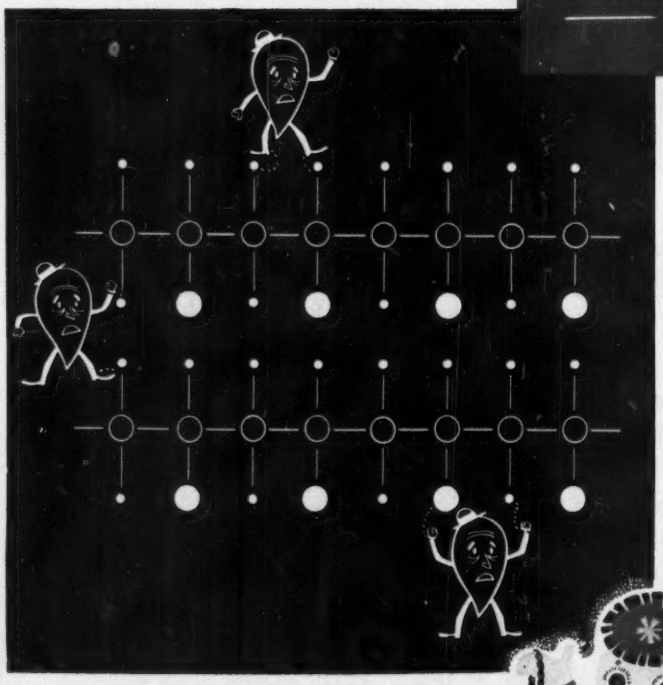

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Trends Create Markets

Story Begins on Page 48

A Changing Market Place (1947-1952)

	Present Distribution of Families	Total Gain in Population	Gain in Over-65 Age Group	Increase in Income	Increase in Savings	Gain in Non-Farm Employment
MID-ATLANTIC Delaware Maryland New Jersey New York Pennsylvania D. of C.	22.4%	8%	31%	33%	9%	6%
NEW ENGLAND New Hampshire Maine Connecticut Massachusetts Rhode Island Vermont	6.1%	5%	22%	33%	2%	6%
PACIFIC California Oregon Washington	10.9%	11%	17%	41%	14%	17%
GREAT LAKES Illinois Indiana Michigan Ohio Wisconsin	20.5%	8%	23%	39%	16%	9%
MOUNTAIN Arizona Colorado Idaho Montana Nevada Utah Wyoming	3.0%	18%	33%	48%	29%	22%
SOUTH ATLANTIC Florida Georgia N. Carolina S. Carolina Virginia West Virginia	10.7%	10%	37%	44%	17%	16%
SOUTH CENTRAL Tennessee Alabama Kentucky Mississippi	6.7%	3%	30%	39%	17%	14%
NORTH CENTRAL Iowa Kansas Minnesota Missouri Nebraska N. Dakota S. Dakota	9.5%	9%	20%	35%	15%	13%
SOUTH WEST Louisiana New Mexico Oklahoma Arkansas Texas	10.2%	10%	34%	54%	38%	24%
NATIONAL	100.0%	8%	26%	39%	14%	11%

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Trends Create Markets (cont'd)

Where you sell can be as important as what you sell. That's why the figures shown above—result of a survey just completed (CW Newsletter, June 6) by McGraw-Hill economists—loom significantly. They scotch some long-held popular beliefs on the geographical distribution of market potentials.

The Mountain states, for instance, are sparsely populated; they account for only 3% of the household groups in the country. But for a new company—or for an older company with a new line of products—they could prove to be a boom-land. They've shot up 18% in population during the last five years, exactly double the national average and nearly twice as much as the boom-minded Pacific and Southwest states.

This kind of growth can act as a forced draft on sales. In many selling situations, rate of increase is just as important as total sales. And a fast-expanding local market can provide the necessary increase even when the share of the market is unchanged.

These geographical considerations hold for both basic producers and makers of consumer items. As trends develop, the latter inevitably move toward the new market potentials. And the basic producers must move in the same direction if they want to hold onto their customers.

Oldsters: One of the above tabulations may come as a surprise to sales managers whose companies sell heavily to the expanding over-65 age group. That's a prime market for drugs, vitamins, television sets, hearing aids—anything that tends to be used by persons whose health is failing or who have more than average leisure time.

It's a popular belief that this market centers in California and Florida, yet the economists find that the Pacific states are actually lagging far behind the rest of the country. Overall, the number of oldsters has increased by 26% in the last five years. But the Pacific states registered only a 17% increase, compared with 37% in the South Atlantic states and 31% for the New York, New Jersey, Pennsylvania industrial areas.

It is with statistics like these that sales managers can plot their geographical selling to match their geographical markets.

Industry in the Classroom

The Chemical Market Research Assn. completes a long-planned educational program at Cleveland's Case Institute of Technology.

Objective: to build professional competence at both the undergraduate and industrial levels.

Nearly every industrial association has an education committee of one sort or another. But few can point with pride of accomplishment as can the Chemical Market Research Assn. this month. It has completed a four-month "lecture series" at the Case Institute of Technology in which a full 10% of the CMRA membership acted as lecturers or assistants.

"Dean" of the educational program was Monsanto Chemical's senior market analyst, Dick Lawrence. His "Administrative Associate" was Case's William von Fischer, head of the Institute's Department of Chemistry and Chemical Engineering. "Professors" were industry professionals from Merck, Freeport Sulphur, Dow, Jefferson Chemical, General Mills, and a half-dozen other chemical corporations.

The "students" were both Case undergraduates (one-fourth of the senior chemical engineering class attended despite the fact that no academic credits could be given) and industrial men from the northern Ohio district.

The effort, moreover, was to reach beyond the present or potential market researchers themselves. Practical market research requires the cooperation of many another corporate department. By educating future sales managers, purchasing agents and other executive groups, the CMRA seeks to foster the kind of understanding that creates an atmosphere in which the market researcher can act as a member of a team.

Pilot Study: This year's Case Institute course is meant to serve as a pilot study for future repeat performances. Several other universities have expressed an interest in cooperating on similar projects. And Lawrence is hopeful that CMRA's course will be duplicated at "one or more institutions during the coming year." He is also

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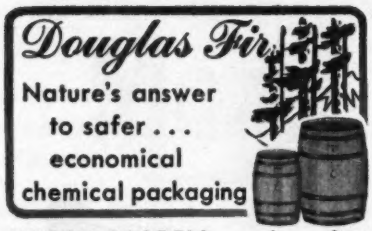

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hopeful that eventually they will be sufficiently established to enable undergraduate students to earn credits while attending.

If these hopes are realized, CMRA may even run a special clinic for regular college instructors. The fifteen talks (given on successive Tuesday evenings) have been published in loose-leaf-notebook style for distribution to all CMRA members. Presumably they will form the basis for the curriculum of future courses.

Faculty: CMRA gives a large part of the credit for this year's success to Case's enthusiastic von Fischer. The Institute mailed over 5,000 leaflets to companies and technical societies in the area surrounding Cleveland and proselyted its own chemical students. The first night's registration was over a hundred—at $25 a head.

CMRA's chore was to arrange for a suitable self-financing "faculty." Drawing entirely from the association membership, Edwin Oppel of New Jersey Zinc assembled a list of specialists for each assignment. On-the-spot arrangements for the speakers were handled by B. F. Goodrich's Kenneth Parker. For protection against last-minute cancellations, substitute professors were alerted. And as a final safeguard, local Cleveland men were prepared to take over on an hour's notice.

Lead-off speaker for the course was Bob Wittenberg, general manager of General Tire and Rubber's chemical division. "In chemical market research," he told his student audience, "we are dealing always with change. It is often difficult for the young scientist or engineer to recognize this and change his concepts. He must deal with dynamic changing data, rather than fixed bench marks."

Methods of measuring this dynamically changing sphere were the subject of the next seven speakers. Published sources, statistics, and field work each had their innings. Then the students were informed on how such data could best be used by those for whom the information was compiled. Larry Finnan of Hercules Powder and Tony Williams of Celanese traced the relationship between a market researcher and his company's purchasing department and top-policy management.

Specifics: The course wound up with five specific "case studies." Five industrial market research executives applied the theories to their own industries: paint, plastics, sulfur, rubber and petrochemicals.

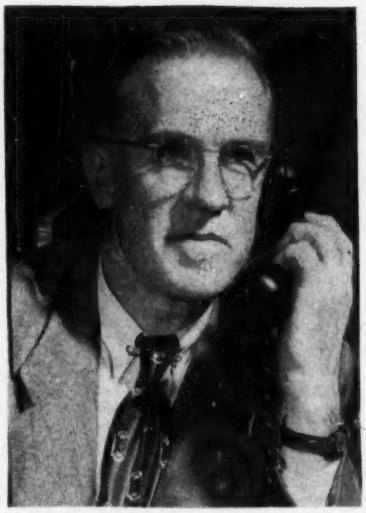
This set the stage for a final summary by James Park, v.p. and general sales manager of the Chemical Products Dept., Enjay Co. Said he:

"Market research is defined as the investigation of both new and old markets, and the potential sales of new and old products.

"Its purpose is to determine what products the company should produce, and what products it should avoid producing . . .

"Its end product, of course, should be to increase both sales and profits. Its function is to coordinate technical research and sales development so that the markets for existing products are capitalized to the fullest and new products reach their broadest and most profitable outlets."

By taking this message to the nation's college classrooms, CMRA is hoping to build its professional future on an educational foundation.



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CASE'S VON FISCHER: A college can look to industry.

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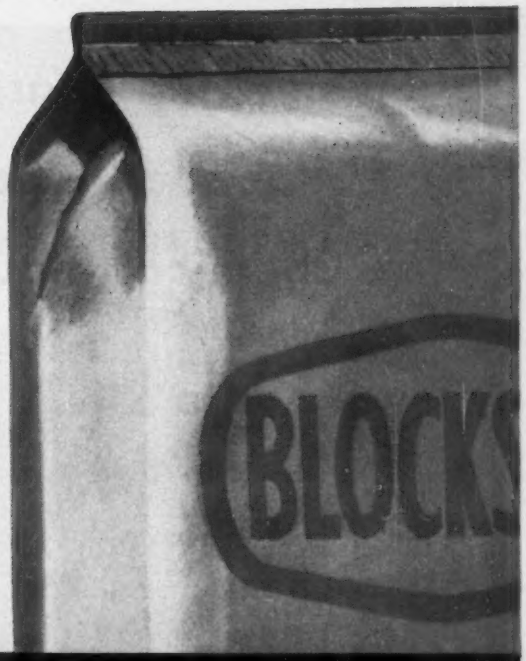

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From Down-Under

Australian industry is largely an unknown factor in most U.S. sales managers' chartbooks. Yet its chemical industry is a fast-growing adolescent that could prove to be a prime source of raw materials—and a prime market for American equipment and products.

Filling in the details of this potential is a new 500-page volume prepared by Australia's Department of National Development. Industry by industry, the study examines present capacities, methods of manufacture, and unfilled needs. Chemicals, plastics, and rubber products each receive special attention.

Entitled "The Structure and Capacity of Australian Manufacturing Industries," the volume is available from the Division of Industrial Development at 203 Collins St., Melbourne.

•

New Office: The international corporations that carry the Dow Chemical flag overseas have established a new outpost in Montevideo, Uruguay. This makes the second foreign office for the two Dow firms—Dow Chemical International Ltd. and Dow Chemical Inter-American Ltd. The first was established in Zurich, Switzerland.

The Midland, Mich., firm's export organizations are now about a year and a half old. And last week, their eastern sales office in New York celebrated its first anniversary.

•

Split Up: Du Pont's Polychemicals Dept. has revamped its sales service organization, splitting new product and applications development from the technical service functions. An assistant manager has been placed in charge of each of the two new sections.

•

Consolidation: Greater responsibility for Monsanto's central purchasing department in St. Louis is the result of a recent shift in the company's procurement policies. The central office will now do all the buying for Monsanto's Missouri headquarters, as well as for the company's Merchandising and Overseas Divisions. In addition, the department will extend its job of buying equipment, materials and services used in common by the six operating divisions.

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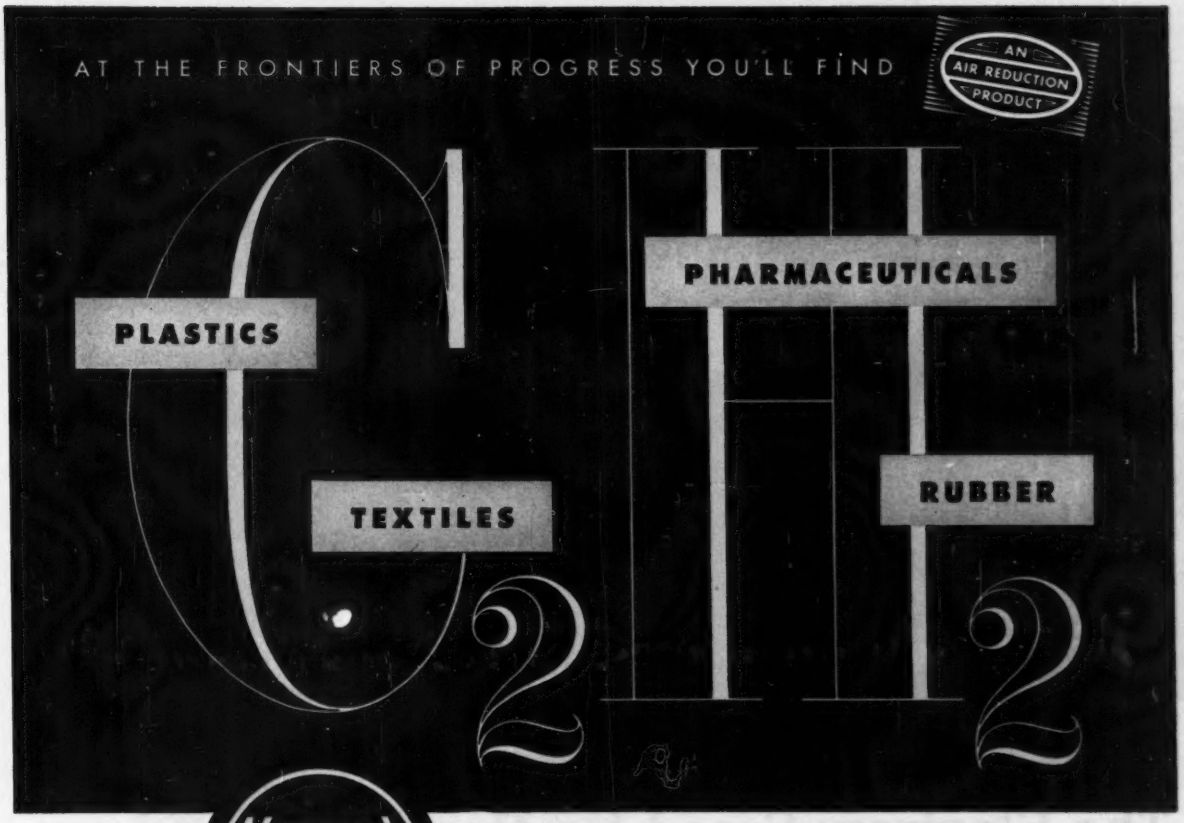
Deadline: Some pharmaceutical makers are apparently waiting till the last moment to comply with labeling changes called for by last year's Durham-Humphrey amendment. Deadline for the new-type labels is in six weeks, on August 1.



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RESEARCH . . .

GE CATHODE RESEARCHERS: Setting up industrial targets . . . for a high-voltage electron beam.

The Electron: Freed for New Feats

A spate of hopeful process applications for cathode radiation is the result of five years' research by General Electric.

Brightest immediate prospects are in food and drug sterilization; but several chemical process uses show promise.

A new cathode ray laboratory at Milwaukee is GE's bid to develop the electron's commercial potential.

Liberated from the fundamental forces which bind it to the atomic nucleus, the electron can be a powerful tool for industry. As a free agent it will induce polymerization of monomers, deactivate enzymes, promote a number of chemical reactions, sterilize foods and drugs, depolymerize many substances, and often alter the properties of matter in useful ways.

That's the message General Electric researchers carried to representatives of the food, drug and allied process industries gathered recently at Milwaukee for the opening of GE's new cathode ray laboratory. And, to lift their claims out of the realm of mere intriguing speculation, the GE electron experts were prepared to produce the goods. Armed with a cathode ray unit and the results of five years' applied research, they were ready and willing to prove that the electron had, in fact, arrived at the threshold of a promising industrial career.

Right now, brightest job prospects are in food and drug processing. Using a standard X-ray unit converted for cathode-ray production, GE researchers went through the paces of cold sterilization, produced sealed exhibits showing its efficacy in preserving bread slices and bicarbonate pills.

Chief appeal of cathode ray sterilization: it minimizes changes in flavor, physical state, etc., commonly caused by heat sterilization. Of course, some heat is generated by the cathode rays (producing about a 2-degree rise in temperature); and they are capable of causing chemical change, often subtle, in their targets. The big question still unanswered to everyone's satisfaction: are these cathode-induced changes undesirable in foods and drugs? Up to the present, no one has come up with a rule for predicting what they will do to any given target material. The only way to find out is to try them.

That doesn't mean, however, that considerable detective work has not already been done. Example: the discovery of peroxides in certain test substances led to the finding that (in the presence of oxygen) peroxide ions form in irradiated water. Some materials may be protected from this unwanted effect by such solvents as ethanol, glycerine and thiourea. Moreover, freezing of foodstuffs may safeguard enzymes by cutting water ionization.

Potential of cathode radiation is not limited to food and drug sterilization. The method also has interesting possibilities in chemical process applications. Here's a fair sampling of what it can do:

- Modification of polyethylene is one possibility. Because the plastic doesn't stand up to autoclave temperatures, it loses out as a packaging material for pharmaceuticals and biologicals. But if polyethylene is irradiated with 20 million roentgens, a striking change takes place. Cross-linking of the long polymer molecules is increased; so are toughness and flow temperature. Blood plasma, still put up in heavy (but easily sterilized) glass, would be a prime candidate for an irradiated polyethylene package.
- Polymerization of various monomers is promoted by cathode irradiation. It's an easily controlled, rather unusual reaction. Using a petri dish of methacrylate monomer and a lead

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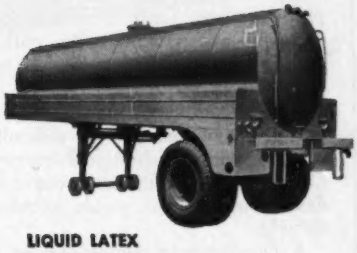

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mask wth a star-shaped aperture, GE demonstrators were able to fashion a plastic star with their electron beam. Polymerization did not extend beyond the star-shaped zone of irradiation; no chain reaction occurred. Since depth of penetration of the beam can be controlled by applied voltage, it's easy to visualize how a technique of cathode ray molding could be used to produce plastic forms of definite shape and thickness. Incidentally, cathode polymerizations are possible at temperatures as low as —100 F.

• Electron beams may spark many chemical reactions that are difficult to achieve with conventional reagents. Case in point: irradiation reduces and deaminates leucine, yields isovaleraldehyde.

• Depolymerization is also in the cathode ray's bag of tricks. The cellulose of wood proved to be a highly satisfactory subject for experiments in this field. By irradiation of sawdust, for example, GE researchers were able to render it digestible to cattle.

• Finally, electron beams will deactivate enzymes by changing them chemically. Tyrosinase, the enzyme that turns apples and bananas brown, can be deactivated by 2.5 million roentgens; enzyme components of industrial fermentation processes offer additional possibilities for gainful employment.

General Electric's cathode ray studies date back more than a quarter of a century. But not until late 1947 did applied research begin in earnest. Today the company has equipment available for practical industrial installation. For their cathode ray generators, GE scientists have taken a standard X-ray unit, replaced the tungsten target with a thin steel window. Instead of generating X-rays, the machine sends out a powerful stream of electrons (cathode rays).

As a cathode ray generator, the unit operates at 800,000 volts (but can go to 1 million) and 200-500 microamperes on 180-cycle alternating current. In so doing, it generates 35 million roentgens a minute. Target area is about 2½ inches in diameter, 4 inches from the steel window. At this distance and dosage concentration, most effective exposures are less than than 15 seconds, cost anywhere up to a few cents per pound of irradiated material.

Cost of the unit is roughly $50,000, but GE has a plan for making them available on a service basis.

What else would a plant need for cathode irradiation? A room, ten by fifteen in size and about 12 feet high, with two-foot-thick concrete walls;

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The booklet containing a recent survey of the various publications is available. A copy will be sent to you upon request.

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and a conveyor system to carry materials in and out. There's no induced radioactivity in the irradiated products and no protective measures are needed outside the concrete room, GE says, "Operation of the unit is simple; an inexperienced person can learn . . . in a day's time."

The new Milwaukee laboratory is a tangible step in the commercial development of the cathode ray. An industrial testing ground, its doors will be wide open to potential employers of liberated electrons. GE wants interested firms to bring their problems to Milwaukee, take a close look at the electron as a new process tool.

•

Merger: Agricultural research activities of the Shell companies are being consolidated under a new division of Shell Development Co. Headquarters of the new research branch will be at Rock Mountain Arsenal, Denver, Colo.).

According to Harold Gershinowitz, Shell Development president, the consolidation will permit closer coordination between the company's agricultural research division and the product development activities of Julius Hyman & Co., division of Shell Chemical Corp. Shell's D. L. Yabroff, formerly of Emeryville, Calif., will head the new division.

•

Reinforcement: Monsanto Chemical Co. is beefing up its plastic division's research facilities at Springfield, Mass., to the tune of $38,000. The money

WIDE WORLD

Ready for the Summer Offensive

AT THE NEW Armour Pharmaceutical Center (Kankakee, Ill.), bombs of gamma globulin are made ready for the summer offensive against polio. In neat rows, the pressure containers are attached to freeze-drying units in one of the last operations of the process that converts human blood to an effective paralysis preventive.

A protein fraction of the blood, gamma globulin is known to carry antibodies to diseases such as diphtheria, measles and yellow jaundice. Only within the past year or two did it prove useful against polio. It confers a passive immunity that lasts only a few weeks—long enough to be extremely valuable in controlling outbreaks of the disease.

Gamma globulin is manufactured under contract with the government with the aid of National Foundation for Infantile Paralysis. Under the system of allocation set up by Office of Defense Mobilization, all of the precious substance not reserved for the armed forces is sent to civic health agencies.

The new Kankakee plant expects to turn out 40,000 vials of globulin a month. Added to the output from the nation's five other plants, this new production will boost total available doses to about 950,000. Public blood donations, through the Red Cross, largely controls the rate of supply.

In the recently completed petrochemicals plant of Texas Eastman Company at Longview, Texas, all facilities for finishing of crude synthetic ethanol were designed, engineered, procured and installed by Vulcan Engineering Division.

The finishing facilities shown above incorporate novel processes developed by Vulcan for the purification of ethanol by extractive distillation and for production of anhydrous ethanol by Vulcan's ether dehydration process.

This complete ethanol finishing installation met all performance guarantees with respect to capacity, recovery, utilities consumption and quality of product within 48-hours of going into operation.

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$C_2H_5OC=C(H)(COOC_2H_5)(COOC_2H_5)$

▸ **DIETHYL MALONATE***

$CH_2(COOC_2H_5)_2$

▸ **PHENYLACETIC ACID*** $C_6H_5CH_2COOH$

▸ **DICHLOROACETIC ACID** $Cl_2CHCOOH$

▸ **CYANOACETIC ACID*** $CNCH_2COOH$

▸ **BENZOPHENONE*** $C_6H_5COC_6H_5$

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RESEARCH . . . . . .

will go towards augmenting activities in physical chemistry, high-polymer physics, and physical and electrical testing.

•

Water Spotter: A new preparation for the determination of traces of water is the offering of R. P. Cargille Laboratories, Inc. (New York, N.Y.). It's called Mois-Tec, is reportedly applicable to the testing of plasticizers, gasoline, fats, waxes, greases, petroleum and vegetable oils, solvents of various types and butanol-soluble organic solids. It won't work with glycerine, acetone, lower glycols, methanol, ethanol and isopropanol. To use, the reagent is added, drop by drop, to a measured sample until a blue-green end-point appears.

•

Moving West: Tracerlab's western division (Richmond, Calif.) will shortly be augmented by a new radiochemical and engineering laboratory. One function of the new facilities: to process radioisotopes for industrial and medical applications.

•

Micro News: Microanalysis will be added to the services offered by Truesdail Laboratories, Inc. (Los Angeles). The consulting firm is in the process of setting up a laboratory.

•

Rice Research: For those interested in the processing possibilities of rice, 14 technical publications on rice, rice bran and rice oil are now available from Southern Regional Research Laboratory (New Orleans). So far, say SRRL scientists, principal industrial use of rice, outside of edible products, is sulfonation of the oil.

•

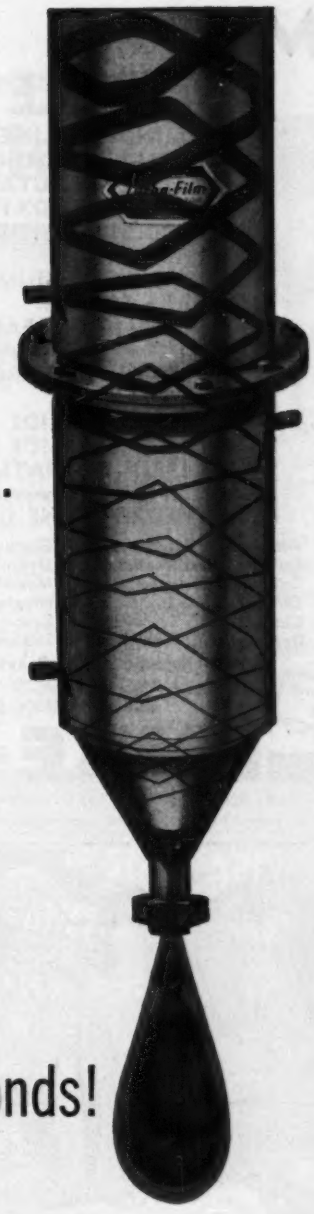
Inhibited Tumor: Recent work at Montreal Cancer Institute (Canada) turns about the use of D-glucosamine to inhibit the growth of laboratory-induced tumors. Treated tumor-bearing test animals, report the Canadian scientists, are showing a survival rate double that of the untreated animals.

•

Migraine Exchange: Something new in headache relief is undergoing trial runs in the South. University of Virginia medics are battling prolonged migraine seizures with prescriptions of ion-exchange resins (actually, potassium and ammonium forms of cross-linked polyacrylic cation exchangers). Having experienced a healthy measure of success, the doctors may move on to high blood pressure and kidney diseases.

•

Lilly 08958: Technically 1-phenyl-1-cyclopentyl - 3 - piperidino -1-propanol



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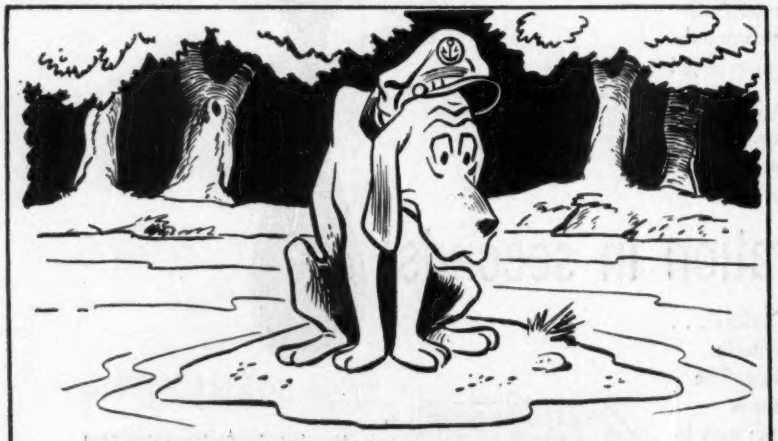

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hydrochloride, one of Eli Lilly & Co.'s (Indianapolis) new drugs is showing promise in treatment of Parkinson's disease (more commonly: "shaking palsy"). Latest word from Mayo Clinic, where the drug is being evaluated, is that 75 of 100 palsy victims treated display objective medical evidence of improvement.

Conjugated for Speed

A new drying oil bowed in on the West Coast this week. It's Safflower 22, a dividend of Pacific Vegetable Oil Corp.'s (Los Angeles) research. Selling points: quick drying, high polymerization rate, resistance to hydrolysis.

Conjugation is the key to the new oil's desirable properties; and unsaturation, in turn, is the key to conjugation. PVO says its researchers "took advantage of an unusual property" of safflower oil—its 75% linoleic glycerides content—and developed a catalytically isomerized oil of 22 to 24% diene conjugation. Fortunately, potentially troublesome saturated and linoleic glycerides are at a minimum in the highly unsaturated oil, can't detract from color retention of the conjugated product.

Proposed applications for the new drying oil are abundant:

- Because of its fast-drying and wrinkling characteristics, is a likely candidate for wrinkle finishes. When proper amounts of driers are used, however, it gives fast-drying, smooth, glossy films. According to PVO, Safflower 22 dries to a gloss film about twice as fast as does unbodied safflower or linseed oil.
- Faster bodying rate is appealing to varnish makers, could mean shorter varnish cooking time, better color and dry. Moreover, the conjugated oil readily replaces linseed or dehydrated castor oil.
- Alkyd resin manufacture might profit from its tendency to alcoholize. Even with abbreviated cooking periods (made possible by the oil's high bodying rate), esterification proceeds to desired low acid values.
- The manufacture of maleated oils is facilitated by the ease with which it takes up maleic anhydride. Alternative processes are cited by PVO: alcoholysis followed by esterification with maleic anhydride; or Diels-Alder maleation and esterification.
- Added possibilities: in the production of styrenated and blown oils; as a means of doing many drying-oil jobs now requiring the use of blends.

• Davison Bulletin •

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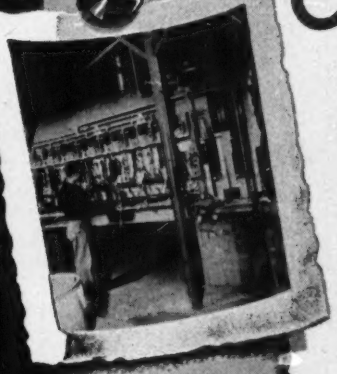

Confidential handling of catalyst problems is one of the reasons why Davison is the major catalyst producer in the country. Intricate coding plus restricted internal distribution keeps your catalyst secrets safe in Davison hands.

Davison recognizes that catalysts are the heart of chemical reactions, therefore, they are a most carefully guarded secret.

And Davison is equipped to meet the requirements of almost any given catalyst problem.

Bring your catalyst problem to Davison where you are assured of confidential handling. Call your Davison Field Service Engineer or write.

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Manufacturers are using economic hydrogel to induce microporosity in rubber, resins and plastics. Material is a highly hydrated amorphous silica. The hydrogel, which is incorporated in rubber products, shrinks during drying operations thereby inducing porosity.

Davison hydrogel (SiO_2) x H_2O is colorless, translucent and available in semi-solid lumps or finely divided. The range of pH is 5.7 — 6.8.

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Dependable Source of Chemical Raw Materials

Left, A. E. Moore, vice president in charge of Research — F. S. Bradley, Chief Chemist, The R. M. Hollingshead Corporation, Camden, N. J.

Hollingshead Grows with Chemistry ...praises Wyandotte Service

Hollingshead Corporation makes everything from car polishes to cocoons for sealing off unused shafts of coal mines . . . is the world's largest manufacturer of automotive chemical products.

Most of their wide range of products is based on chemical formulas. In fact, so important are chemicals to Hollingshead and to all industry that an important concept in Hollingshead's philosophy of business is: "Frow now on, the mechanical age will simply be a tool with which the chemical age will go forward."

In speaking of Hollingshead's many activities, A. E. Moore, vice president in charge of Research, said: "We have more than 1,000 active formulas. All of our products are made under rigid methods of quality control.

"For many years, Wyandotte Chemicals has been an important source of supply for us. Currently, we are using Wyandotte KREELON*, Caustic Soda, Bicarb and Ethylene Dichloride. We have found these products consistently meet our standards of uniformity and quality.

"We can also state that Wyandotte has been willing to furnish us with helpful technical service in chemical applications. We consider them an excellent source of supply."

If you are dependent on chemistry, directly or indirectly, bring your problems to us. We will aid you in the application of existing chemicals, or place our facilities at your disposal for the development of new chemicals, if need be. *Wyandotte Chemicals Corp., Wyandotte, Mich. Offices in principal cities.*

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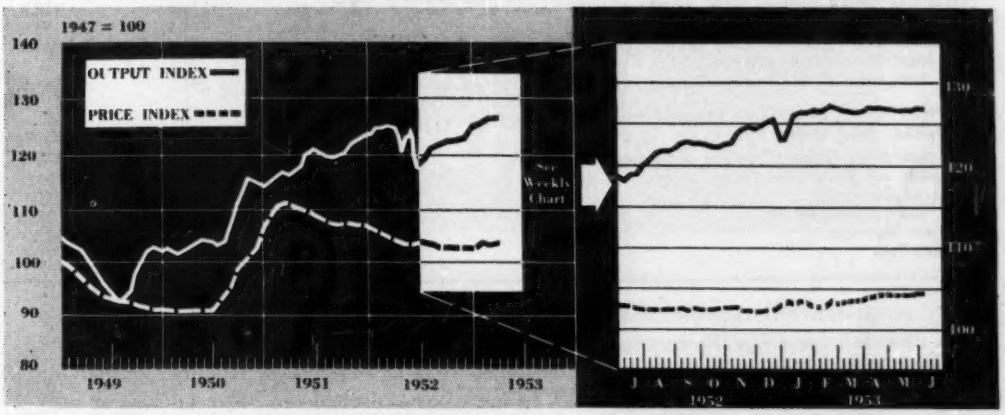


CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

The rash of higher prices that began to break out soon after price ceilings were lifted may not be clearing up, but by this week the eruptions are occurring with somewhat less frequency.

Reason behind the slowdown in markups is a matter of viewpoint. For instance, some price-hike-conscious customers are satirically wondering whether there are any chemicals left that have not experienced a boost. Chances are, though, most pencil-wielding producers are just waiting to see what market conditions will be after the first of July—the date when many of the recently announced advances go into effect.

A slight slackening of business is expected during the next few months, of course, due to "normal" summer vacation shutdowns, but if the falling off in demand proves too far out of proportion, you can look for a few price cuts before the fourth quarter rolls around.

Meanwhile, prevailing, and even more upcoming higher prices of basic chemical commodities, coupled with the now-familiar plaint of "boosted manufacturing costs," will rocket prices on a few more derivative items. More expensive benzol, sulfuric, nitric acid and chlorine are responsible for these higher intermediates' schedules:

Effective next month aniline oil, in tank car quantities, will cost consumers 20¢/lb., up 2¢; aniline salt (l.c.l.) will jump to 33¢/lb., up 3¢; and dimethylaniline is slated to advance 3½¢, sell for 28½¢, tank cars, and 29½¢/lb. in drums (c.l.)—a penny more than that in less-than-carlot drum amounts.

Some beta-naphthol users will officially shell out about 2¢/lb. more for this dyestuffs intermediate starting July 1. The technical grade material will sport these new tags: 34½¢/lb. (c.l.), 36½¢, (l.c.l.). And at the same time nitrobenzene makers will up their prices about 1½¢/lb. in order to pass on to the consumer some of the expense of the increased benzol and acid raw material costs.

Also being dragged up by higher primary raw material costs are some important chlorates. And these, too, are scheduled to jump July 1. Sodium chlorate—now latched onto the weed-killer boom—and versatile

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	126.4	126.4	118.0
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.4	104.4	103.6
Bituminous Coal Production (daly average, 1,000 tons)	1,523.0	1,609.0	1,264.0
Steel Ingot Production (1,000 tons)	2,226.0(est.)	2,208.0(act.)	
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	236.5	244.1	244.6

MONTHLY INCICATORS—Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All Commodities (Other than Farm and Foods)	109.8	109.4	113.0
Chemicals and Allied Products	105.6	105.5	104.3
Industrial Chemicals	118.2	117.0	115.1
Drugs and Pharmaceuticals	93.1	93.0	92.2
Fertilizer Materials	112.9	113.2	111.5
Oils and Fats	50.4	55.9	47.2

potassium chlorate (explosives, dry colors, paper, oxidizing agent), are both headed for a ½¢/lb. increase.

New prices announced late last week by one major producer (Oldbury). For the sodium, 10¼¢/lb. in less-than-600-lb. lots; 9¼¢, 600 lb. or more; and in c.l., 8¾¢. Potassium chlorate, in that same order, will cost 12¢, 11½¢ and 10¾¢/lb.

Chances are West Coast customers of the other big chlorate maker (Pennsalt) will be handed similar increases. It's fairly certain, too, that reagent-grade consumers are bound to feel some chain-reaction nudges in the not too distant future.

But not all price increases are being nailed to a future date. Last week, in the nonferrous metals market, lead users were handed their fifth hike in six weeks—with no guarantee that it will be the last.

Producers have been cautiously inching the price upward (most of the time by a slight ¼¢/lb.), have now reached the early-April level of 13½¢ (N.Y. basis). A spurt in the London market, plus an undramatic—but steady—domestic demand, is behind the latest price nudge.

Paint makers are also being charged ¼¢/lb. more for some pigments, because of the higher pig price. Red lead is now at 16¼¢; orange mineral, 18.6¢; litharge, 15¼¢/lb. (all prices c.l.). Demand for the oxides has been fair, with supplies adequate to meet all calls.

And not all prices are going up—though it may seem so to picket-digging customers. Wyandotte Chem.'s new nonionic detergent prices, for example, have been clipped about 10 per cent. The Pluronics (condensate of ethylene oxide with polyoxypropylene glycol), now out of the product development stage, are pegged at 38½¢/lb. for the liquid series (truck load or car load); the nonionic flake detergent (F68) is selling for 43½¢.

The fine chemicals market last week featured a first-in-five-years advance on citric acid and sodium citrate prices. The country's largest producer last week upped his schedules for the familiar reason—higher manufacturing costs. The USP-grade citric acid prices are advanced 2½¢/lb., the anhydrous, 2¼¢. The former (in drums) now lists at 27¢/lb., c.l.; 27½¢/lb. in 10,000-lb. lots. Anhydrous tags: 28¾¢/lb. in car loads; the 10,000-lb.-lot price is quoted at 29¼¢.

Sodium citrate (USP powdered), hiked 1½¢/lb., is currently selling for 29½¢ (bags, 10,000-lb. lots), and 28½¢, c.l. (bags).

UP — SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending June 15, 1953

	Change	New Price		Change	New Price
Citric Acid, Anhyd., Gran., Drms., Av., c.l.	$ .0225	$ .2875	Lead Metal, Pigs, Prime, N.Y.	.0025	.0465
Citric Acid, USP., Gran., Drms., c. l.	.025	.27	Chlorosulfonic Acid, Drms., c.l., frt., equld.	.0075	.1325

PRODUCT CONTROL THROUGH INFRARED ANALYSIS

Number 9 *of a Series of Data Sheets for Better Process Control from The Perkin-Elmer Corporation, Manufacturers of Infrared Spectrometers, Flame Photometers and Electro-optical Instruments.*

PLANT:
Pond's Extract Company, Clinton, Connecticut.

PROBLEM:
Identify and control quality of raw materials used in cosmetic products. Ingredients purchased from many different suppliers must be checked for uniformity and freedom from extraneous materials.

SOLUTION:
Routine use of infrared analysis on samples of incoming materials. Typical analyses are the following:
1. Grading geraniols by determining amounts of terpines, sesquiterpines and esters present.
2. Determining the presence of extraneous alcohols in aromatics such as citronellol.
3. Control checking of multicomponent blends of essential oils and aromatic chemicals used in perfumery.

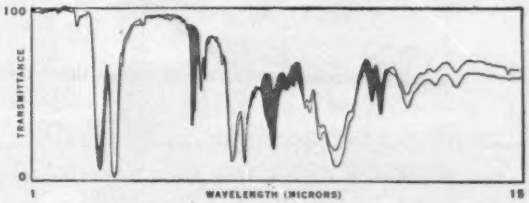
INSTRUMENTATION:
A Perkin-Elmer Model 21 Double Beam Infrared Spectrophotometer with NaCl optics and standard liquid sample cells. (see above right)

DISCUSSION:
In addition to the usual organoleptic examination, infrared has proven far quicker than classical methods. A typical infrared analysis takes 15 minutes as compared with four to forty hours for the usual organic analytical tests.

CONCLUSION:
Quick and accurate infrared analysis of expensive perfume raw materials safeguards against the purchase of inferior materials and insures the quality of the final product. The instrument paid for itself in a few months.

REFERENCE:
"Spectrophotometry In The Analysis Of Cosmetic Products." G. Robert Clark, Journal of the Society of Cosmetic Chemists, II, 290, December, 1951.

Model 21 Spectrophotometer at Pond's Extract Co.



INFRARED SPECTRA of high grade and soap quality geraniols superimposed on the same chart. The cross-hatched portions indicate areas of significant spectral differences between the two samples from which may be deduced the type and quantity of impurities present.

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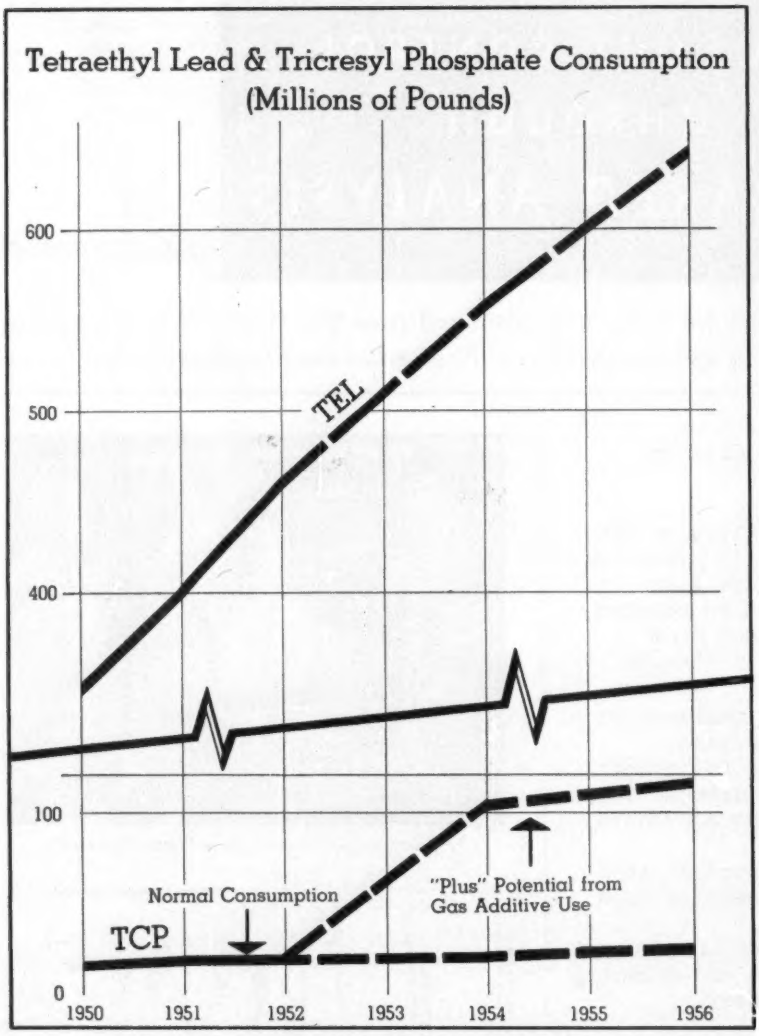


GASOLINE ADDITIVES: TCP's wagon is hitched to TEL's star.

TCP On the Road

Motorists in some 16 widely scattered U.S. cities* by this week have become aware that something new had been added to the gasoline picture. Shell Oil stations blazoned with the eye-catching, purse-comforting news that its new premium gasoline with TCP—for only ½¢/gal. more—would counteract the ruinous effect of metallic deposits in spark plug fouling, as well as reduce pre-ignition.

It would also, claims Shell:

- boost engine power up to 15%,
- increase mileage,
- triple spark plug life.

Outlet Boomer: Though the average motorist may not evince too much curiosity as to what the initials "TCP" stand for, it's a sure bet that Shell—and most other gasoline makers—will heed well whether or not he buys Shell's comprehensive, concentrated publicity barrage, takes to tricresyl phosphate as a gasoline additive. And also understandably concerned with the test cities' reaction are the nation's top TCP producers—Monsanto, Ohio-Apex, Celanese, Montrose Chem.

Universal use of the cresyl compound as an anti-plug-fouling agent may well triple production and consumption of TCP, tax existing capacity, crowd current plasticizer use as the prime TCP outlet—all within the next three or four years.

Tricresyl phosphate has shown a surprising expansion, use-wise, in the last few years. As recently as 1947 only two outlets were listed in most end use patterns. Plasticizers accounted for about 90% of the then shade-better-than 10 million lb./year output; the remaining 10% was usually lumped in a miscellaneous category that included lubricants and oil additives.

By contrast, look at this industry estimate of how the probable 19-20 million lb. production pie will be cut up in 1954:

Tricresyl Phosphate End Use Pattern 1954 (est.)

Plasticizer	50%
Cellulosic (including wood and metal lacquer)	10%
Gasoline additive	10%
Hydraulic fluid	5%
Lubricant and oil additive	5%
Air filter	5%
Adhesive	3-5%
Misc. (ink, duplicating stencil, etc.)	10%

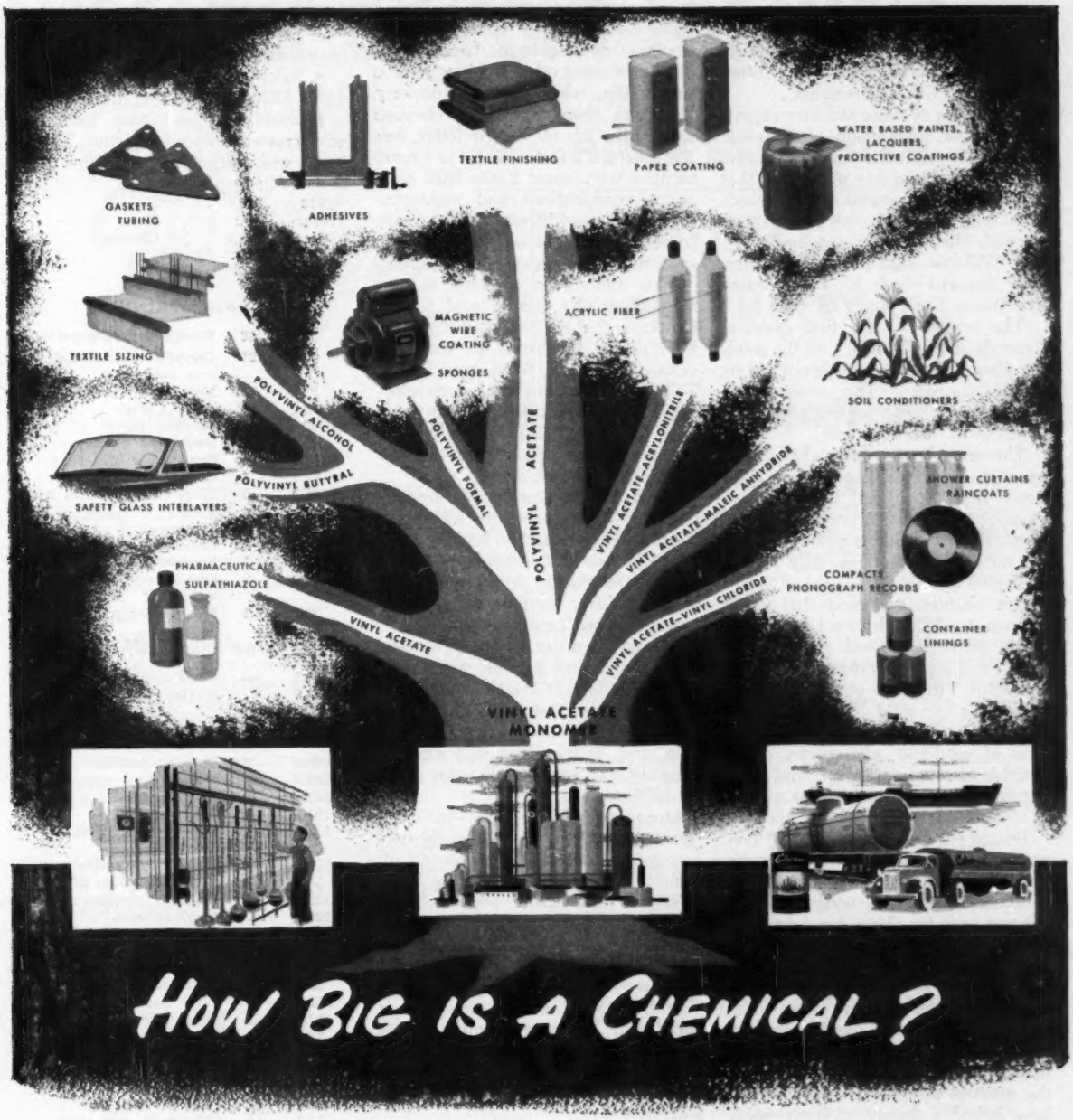
Though taking less (on a percentage basis) than it did in the past, the plasticizer outlet is still top dog as a tricresyl consumer. Currently, some 8.5 million lbs. winds up in vinyl, polystyrene and cellulose-derived plastics. The biggest taker is polyvinyl chloride.

Here there's much to recommend tricresyl phosphate. For instance, during World War II, its property of forming tough, waterproof films led to a burgeoning use as a cable coating. And because the cresyl compound contributes nonflammability, it is especially valuable for nitrate lacquers. This same flame-resisting characteristic may well increase the hydraulic fluid take, which now amounts to about 800,000 lbs./year.

But the most interest-garnering use for tricresyl, of course, is the latest—as a gasoline additive. How large a potential market this may be is pointed up by at least one tricresyl phosphate pioneer's optimistic—but considered—estimate that in the foreseeable future automobile gas tanks will swallow some 40 million lbs./year, and another 10 million lbs./year will be consumed in aviation gasoline—an added 50-million-lb. TCP market.

Invariably, when demand figures are kicked around, the question of supply factors also pops up. Coal-derived cresylic acid—traditional basic ingredient—still underpins the bulk of TCP production. But at least one tricresyl maker candidly admits its product comes from petroleum cresylic, adds that more and more producers will have to lean heavily on the same source. For, as with most

* Akron, Atlanta, Baltimore, Boston, Cincinnati, Detroit, Houston, Louisville, Memphis, Minneapolis, Portland (Ore.), Sacramento, St. Louis, St. Paul, San Diego, Spokane.



CELANESE* VINYL ACETATE MONOMER OFFERS CREATIVE OPPORTUNITIES TO HUNDREDS OF AMERICAN INDUSTRIES

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Celanese Vinyl Acetate Monomer—ready in tankcar quantities within a few weeks—will be produced by specially developed processes, utilizing Celanese-produced raw materials, in the newest, most up-to-date petrochemical plant in the country. Two grades of monomer will be available: A-grade, stabilized with diphenylamine, and H-grade, inhibited with hydroquinone.

The possibilities and opportunities for vinyl acetate derivatives warrant thorough investigation. We will be glad to assist you with complete technical data and literature. Write:

Celanese Corporation of America,
Chemical Division, Dept. 652-F, 180
Madison Avenue, New York 16, N. Y.

Celanese* CHEMICALS

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coal tar chemicals, production expansion has definite limits; hence, producers must, of necessity, look to petroleum cresylic to fulfill any future exploding TCP requirements.

Consensus of some industry experts is, however, that none of the four major U.S. producers is likely to dash out, throw up another plant—not, that is, until a few questions are answered:

- Will other gasoline makers line up with Shell as TCP customers?
- Will the final judge—the American motorist—flock to TCP-needled gasoline as Shell hopes he will?

The answer to the first question depends on Shell's policy on the product after it reaps the full benefit of its initial campaign. The company is well-covered with patents, but may conceivably license others.

The second poser is tougher. However, if the ultimate consumer shies away from "chemical additives" in gasoline, as he did in bread softeners, Shell, as well as others who are working on similar programs, may just as well give up.

But chances are good that won't happen, for TCP addition is no fly-by-night gimmick to sell gas. Behind Shell's full-scale advertising broadside—scheduled to hit its peak within two months—is a solid background of more than five years' research, millions of road-test miles under every possible driving condition, and tacit approval—at least for the aviation gas-TCP combination—of the government.

During the last two years TCP (reportedly in an alkylate or an aromatic hydrocarbon solution to aid dispersion, handling) has been used in Navy fighters and Air Force bombers, and in military and commercial helicopters. It is now being extensively tested by a number of airlines.

Although not the first chemical to be touted lately as a gasoline or performance improver,* TCP does bid fair to register as the additive with the greatest promise. Reason: it may have licked a thorny problem—spark plug fouling, i.e., shorting out of plugs due to metallic deposits. These deposits become conductors at high powers, resulting in faulty ignition, loss of power, severe roughness in the engine.

TCP Quest, Hope: The search for a compound that would prevent this formation, or at least nullify the effects, was originally undertaken to beat the costly replacement of spark plugs in aircraft engines. With plugs costing up to $4 each, and as many as 56 or more to a plane (the Boeing Stratocruiser, for example, takes 224), spark plug manufacturers had tried, and failed, to come up with a solution that would cure the fouling without introducing other troubles such as pre-ignition, which leads to knocking.

It was then that Shell chemists tackled the job (*CW Newsletter, July 28, '51; CW, Oct. 13, '51*), experimented with some 2,000 lead scavenger combinations and concentrations with additives. The result: tricresyl phosphate was hit upon during study of phosphorus compounds.

Plug fouling in airplane engines was apparently licked, and it was inevitable that the new-market searchlight should be turned on the automotive field. And Shell, now hailing TCP as the "greatest gasoline development since the discovery of tetraethyl lead" (in 1922), fervently hopes that its additive will emulate—marketwise—the antiknock agent.

While no pinpoint figures are officially available on tetraethyl lead production or consumption, because there are only two U.S. producers, (Ethyl Corp., Du Pont), it is possible to arrive at fairly accurate estimates of motor fuel use (*see chart*).

If—and it's a great big, impractical if—all automotive gasoline were to be both TEL- and TCP-injected the consumption curve of the "plasticizer" material would take a cloud-kissing leap, and, as the chart indicates, hit a fantastic 117 million lb./year mark by 1956.

More probable, down-to-earth "guesstimates," however, have the new gasoline additive outlet siphoning off some 2 million lbs. of TCP by 1954, adding a still-hard-to-believe 50-60 million lbs./year requirement to tricresyl phosphate production two or three years beyond then.

In any event, whether TCP becomes universally used or not, this much is certain: it has opened up a major new market for gasoline additives and may soon take the emphasis off high octane numbers as the power-potency indicator.

* Among others: Sinclair's antirust additive, RD119 (ammonium mahogany sulfonate); Esso's contribution (isopropanol), which successfully combats carburetor icing, prime cause of winter stalling.

SOC Roster

With the 1952 roll call more than 95% complete, the U.S. Tariff Commission's production and sales figures on miscellaneous and cyclic intermediates among the synthetic organic chemicals group fall into diverse patterns.

The broad classifications stack up this way (percentages in parentheses show changes from 1951):

Miscellaneous Chemicals

- Production: 15,786 million lbs. (down 5%).
- Sales: 7,289 million lbs. (down 1%), $1,145 million value (up 3%).

Cyclic Intermediates

- Production: 4,239 million lbs. (down 6%).
- Sales: 1,544 million lbs. (down 14%), $290 million value (down 14%).

Individually, production increases or decreases ran a wide gamut. Those items with output of 10 million lbs. or more line up like this:

1952 Production Millions of Lbs.	Per Cent Change from 1951	Chemical
These went UP		
53.5	108	Hexamethylenetetramine.
30.3	85	Cresylic acid, refined, from petroleum
55.0	38	Methylene chloride, all
136.5	28	Amines, total
760.5	27	Ethylene glycol
58.3	17	Diethylene glycol
19.3	16	Naphthenic acid salts,
47.1	7	Chlorinated paraffins
441.9	5	Ethyl chloride, tech. and U.S.P.
12.1	5	Dichloroethyl ether, all
35.2	5	Chloroacetic acid, mono
46.1	5	Propylene oxide
1,022.4	3	Formaldehyde (37% by weight)
90.6	2	Propylene glycol
These held STEADY		
858.2	—	Ethyl alcohol, synthetic
436.0	—	Ethylene dichloride
These went DOWN		
476.0	—2	Carbon disulfide
700.0	—2	Styrene
252.4	—2	Cyclohexane
105.7	—4	Perchloroethylene
102.3	—4	Naphthalene, refined flake, total
228.6	—8	Phthalic anhydride
33.6	—9	Methyl chloride, all
19.1	—10	Flotation reagents
208.6	—10	Kerylbenzenes
219.4	—10	Carbon tetrachloride
1,098.5	—10	Methanol, synthetic
40.9	—10	Pentaerythritol
25.0	—12	o-Dichlorobenzene
305.7	—13	Butyl alcohols, 100%.
337.8	—13	Phenol, total
22.1	—13	Chloral
65.2	—14	Ethyl ether.
14.1	—15	Sodium carboxymethylcellulose, 100%
72.3	—15	Ethyl acetate, 85%
21.9	—15	Chloroform, tech. and U.S.P.
138.0	—16	Nitrobenzene
382.9	—16	Acetic acid, synthetic, 100%
12.8	—18	Sodium formate, total
383.2	—19	Chlorobenzene, mono
48.7	—19	p-Dichlorobenzene
53.8	—21	Butyl acetates, 90%
439.6	—21	Acetone, total
845.9	—21	Isopropyl alcohol
95.9	—22	Aniline
21.3	—22	Cresols, total
25.3	—23	Tanning materials, total
13.8	—24	Acetic acid salts, total
17.8	—25	Maleic anhydride
12.2	—28	Formic acid, 90%
544.0	—29	Cellulose acetate
686.3	—30	Acetic anhydride, 100%, from all sources
15.6	—35	Oxalic acid
24.2	—38	β-Naphthol
14.9	—40	Cresylic acid, refined, from coal tar

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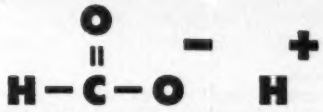
LEATHER—Formic acid is useful in promoting uniform dyeing of hides, skins and furs. Its volatility prevents deterioration of stock due to residual acid.



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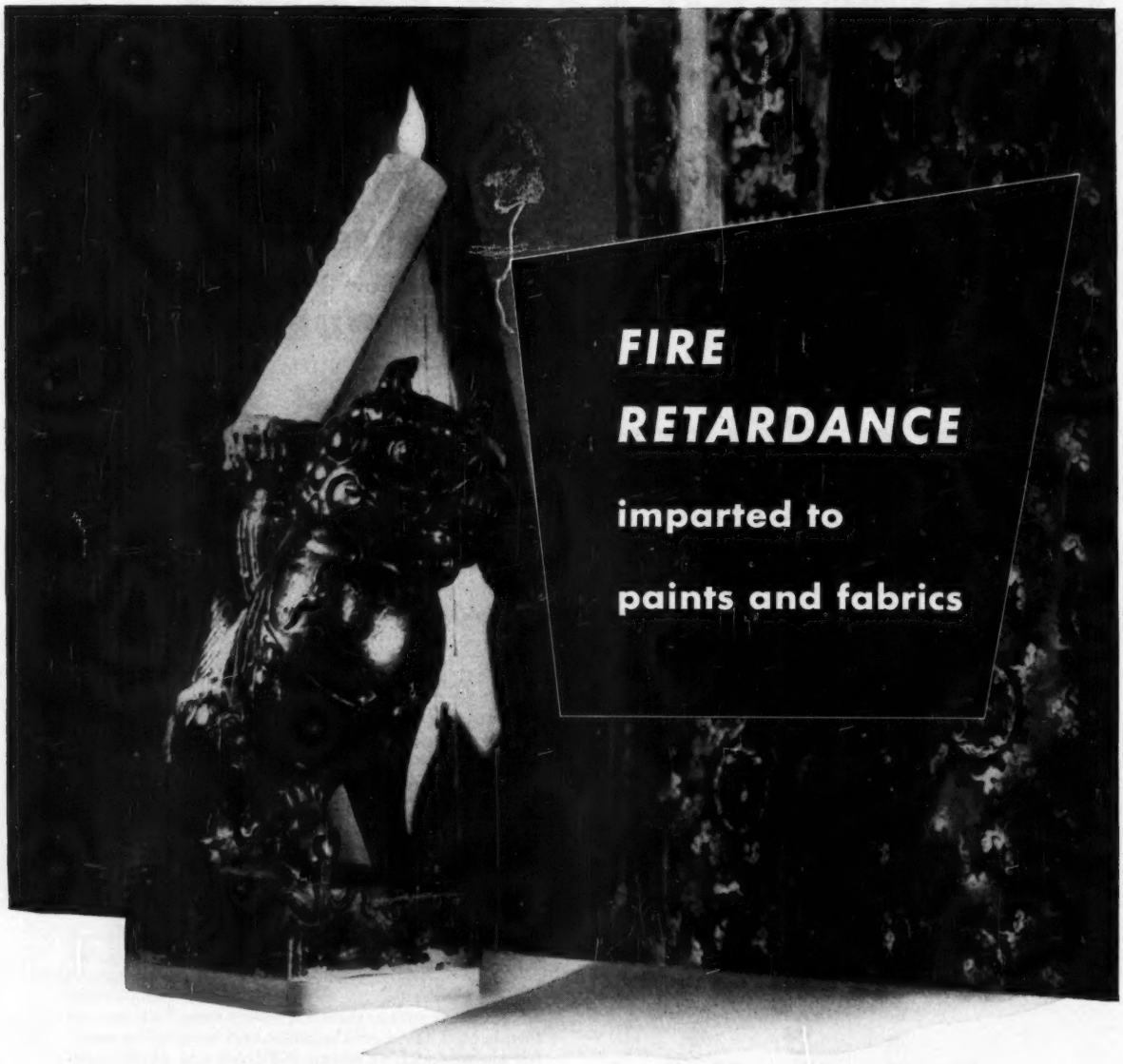

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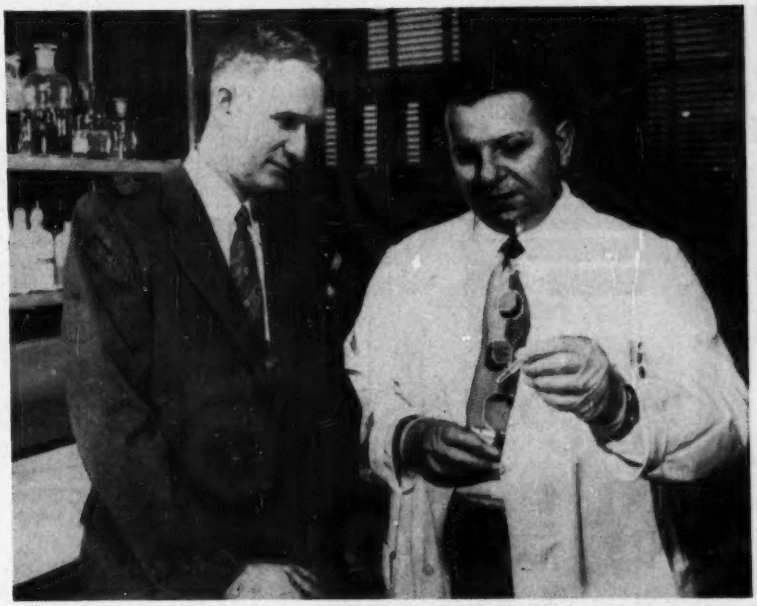

ARGONNE'S W. H. ZINN AND STEPHEN LAWROSKI: In the vial, vindication of a theory.

Atoms at the Crossroads

Although it is not known with certainty whether fuel breeding is practical or not, it is undoubtedly possible in principle . . . Sourcebook on Atomic Energy (1950), SAMUEL GLASSTONE.

It is evident, therefore, that the general usefulness of nuclear fission energy, apart from special cases, will depend to a large extent on the possibility of breeding . . . Until success in this connection is achieved, the future of atomic energy is somewhat in doubt.—ibid.

Just two weeks ago, at the twenty-first annual meeting of the Edison Electric Institute in Atlantic City, Gordon Dean, chairman of the Atomic Energy Commission, revealed that the theory of breeding has been successfully translated into practice. Any lingering doubts on "the future of atomic energy" were dispelled when Dean said, "I now have word that Dr. Zinn, Dr. Lichtenberger and their Argonne [Argonne National Laboratory] colleagues have used the reactor to demonstrate successfully the principle of breeding."

As Glasstone points out, there have never been any serious doubts about the principle of breeding. Here's why: uranium as it is normally found in nature contains only one part of the fissionable isotope, U-235, for 140 parts of nonfissionable U-238. But neutrons released from the fission of U-235 can be absorbed by U-238 to produce easily fissionable plutonium-239. If at least one atom of plutonium is formed for every atom of U-235 that is destroyed, the chain is self-sustaining and all the nonfissionable U-238 is converted into fissionable P-239. And that's breeding.*

Similarly, it's possible to convert thorium-232 into fissionable uranium-233. Thorium, however, was not tried in the breeding experiment. And although results indicate that thorium might ultimately be used, Dean makes it clear that "its susceptibility to breeding has not been proved."

Questions Unanswered: In any case, it is impossible to measure the impact of the breeding experiment on the timetable of development of an economic nuclear power reactor. It is only possible, in fact, to state what the successful experiment does not mean. As Dean freely admits:

- It does not mean that overnight the country has obtained all the fissionable material it needs. Dean goes as far as to state that the breeding principle may not even be incorporated into the first atomic power plants.
- Nor does it mean that the U.S. is suddenly independent of raw uranium ore. For breeding is, of its nature, a time-consuming process and it could take five years before a reactor would produce as much fissionable material as was initially charged.

On the other hand, it does indicate that it's possible to ultimately make use of all the uranium—fissionable or not—that can be extracted from the earth.

That, of course, means sizable savings on fuel for a nuclear power plant. And, as at least Dow and Detroit Edison figure it, that's the only advantage a nuclear reactor has over a coal-fired generating plant. Even at that, the room for savings is relatively small.

In their joint report to the AEC, they say that whether steam is generated in conventional boilers or in a nuclear reactor, 80 to 85% of a large utility investment would remain unaltered. The area for improvement then would be in the remaining 15 to 20% of the investment.

And though Dean says "we're at

* Strictly speaking, breeding involves producing one or more atoms of the same material as is consumed in the fission. In common usage, however, it has come to mean the formation of one or more atoms of any fissionable material for every fissionable atom consumed.

Milestones in Reactor Technology

We're now at the crossroads in the matter of atomic development, says Gordon Dean. These he rates as the "technical milestones" that have been passed along the way:

- **The initial successful operation of a nuclear chain reactor, Dec. 2, '42, by Enrico Fermi and his staff at the Metallurgical Laboratory at the University of Chicago. This climaxed the significant contributions of John Dunning at Columbia University.**
- **First successful production of useful atomic power, Dec. '51, in the experimental breeder reactor by the Argonne National Laboratory (although it didn't breed).**
- **Reports of the four industrial study teams (Commonwealth Edison Co.-Public Service Co.; Dow Chemical-Detroit Edison Co.; Monsanto Chemical-Union Electric Co.; Pacific Gas and Electric Co.-Bechtel Corp.) that were turned over to the AEC last summer.**
- **Start-up of the first atomic power plant for submarine propulsion earlier this year at the Reactor Testing Station in Idaho.**
- **Successful demonstration of breeding.**

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the crossroads" in atomic energy development, there are several big questions that must be answered. Monsanto and Union Electric, of course, have proposed a nuclear power plant to turn out electricity competitive with that from coal-fired plants. But their estimates are predicated on the assumption that the AEC would purchase plutonium, that the sale of plutonium would offset all costs for fuel. All four industry teams, in fact, believe that reactors to produce plutonium and electricity are technically feasible right now and that the credit for plutonium would reduce the cost of power. But the military need for plutonium is one of the big imponderables; and not one of the four believe that a nuclear reactor producing power alone is economically feasible in the near future.

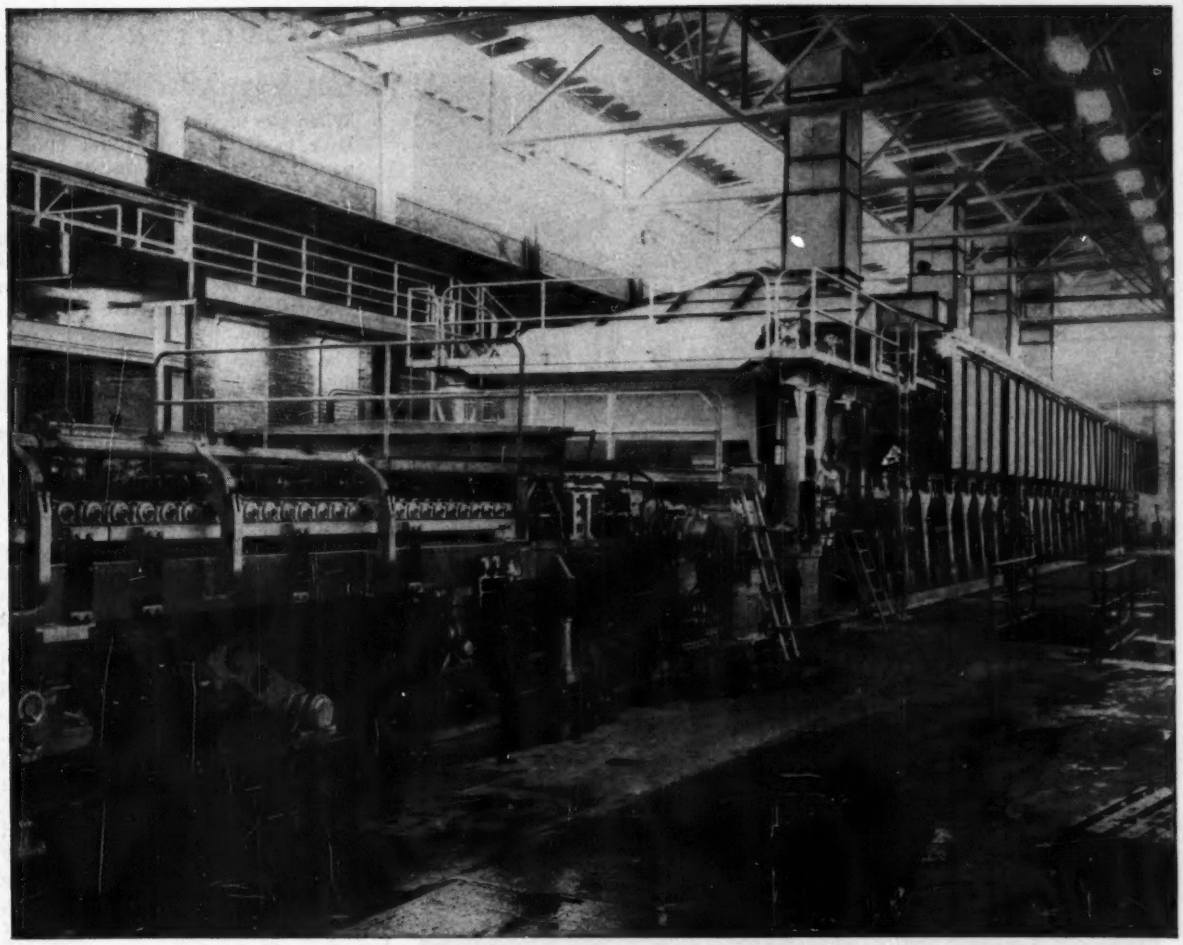
Significant is the fact that none of the companies is willing to build a nuclear power plant entirely with its own money. Every one of the proposals submitted included a subsidy from the government in some form.

This reluctance on the part of industry is readily understandable, for the task is certainly the most staggering one ever presented to a group of engineers. One big problem is the processing and separation of the reactor-bred fuel. Another is the question of materials of construction and maintenance.

Some insight into the size of that problem can be gleaned from a statement by AEC's Lawrence Hafstad and quoted in *Fortune* (June, '53). Talking to a group of aeronautical engineers about his maintenance problems, he said, "How would you like it, if instead of merely disassembling, your entire engine had to be dissolved in nitric acid and the rebuilding of the engine started with getting a solution of certified chemically pure iron. That is the fuel processing problem."

And the Dow-Detroit Edison industry team, in its report, mentions the thorny question of obtaining a plant site. They figure that, under the present exclusion area rules, to put up a reactor within the distribution territory of Detroit Edison, the cost of the plant site per kilowatt of electricity could amount to 50% of the present total cost of a steam plant.

But at the same time, none of the problems is insurmountable. Big strides have been made in the technology of processing and separating the fuel, developing and testing new materials of construction. It's also probable that technological improvements will justify a downward revision of the exclusion area.



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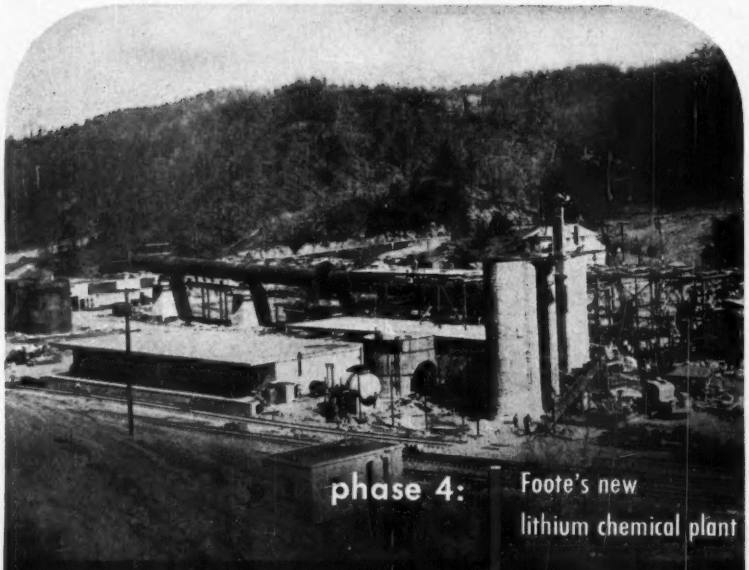

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PRODUCTION . . . .

On Borrowed Steam

When two of your plant's five boilers have to be shut down for maintenance, do you reduce operations? Not if you're like Monsanto Chemical. Facing that problem at its Indian Orchard, Conn., plant last week, the firm decided to keep production going full-tilt by borrowing four steam locomotives from the New York Central Railroad.

The problem arose when one of the five boilers had to be shut down for routine semiannual maintenance. Ordinarily four of the boilers could handle the plant's steam requirements, but another one is temporarily out of commission for what Monsanto describes as "extensive modifications."

The firm had anticipated the trouble, had originally planned to rent the locomotives in July. A moved-up date on the receipt of replacement boilers for the one undergoing the extensive modification, however, caused the whole project to be pushed ahead several weeks.

The rented locomotives were located in the New York Central Yards at Rensselaer, N.Y. An ironic twist: the three railroads serving the Indian Orchard area have all been dieselized and citizens there have not seen a steam engine in several years. The steam engines were towed by diesels, not fired until they were ready for use.

When the steam engines arrived, they were shunted off onto a Monsanto siding and stationed near the power house. The locomotives were then hooked up by piping to the steam main to supply about 40,000 lbs./hr.

EQUIPMENT . . . .

In Print: Bassons Industries Corp. (New York) is off the press with a new brochure called "Idea to Product." Subject is the firm's development work in forming thermoplastic sheeting and molding.

- Applications of new stainless alloys to the oil, chemical and petrochemical industries are described in a booklet now available from Solar Aircraft Co. (San Diego).
- Titeflex, Inc. (Newark, N.J.) has just published a new metal hose catalog, No. 200. Information included: frictional losses charted against flow rates in flexible hose and photographs detailing production of seamed metal hose.

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Cleaning Combo: Livingstone Engineering Co. (Worcester, Mass.) is now marketing a new industrial cleaner.

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CHEMICAL WEEK
330 W. 42nd St., N.Y. 36, N.Y.

In Touch for Security

BORROWING A PAGE from the Army field manuals on communications, Du Pont has installed a radio network for members of its security patrol at its Sabine River Works, near Orange, Tex. Included are two handie-talkies, mobile sets for use in plant vehicles, a base station in the plant's communications room and a remote control station for use by the emergency director in case of emergency only. At the base station (*above*) Patrolman Ellis Landry takes a report from Patrolman Rudy Comstock (*right*). The new system has proved useful, says Du Pont, in speeding exchange of information between patrol members located at distant points in the plant. It's expected to prove even more valuable in establishing road blocks, directing traffic and coordinating security force efforts.

Produced in cooperation with Sellers Injector Corp. (Philadelphia), the Speedyelectric Hydrosteam combines Sellers' hot-water-under-pressure jet with Livingstone's dry-steam detergent jet. The unit is designed for use on both heavy-duty and delicate water-sensitive machinery, contains a boiler for complete self-sufficiency and is available in either portable or stationary form.

•

Mushrooming: Atomic Instrument Co. (Cambridge, Mass.) recently appointed Kittleson Co. (Los Angeles) as northern California representative for its line of radioactive research instruments.

•

Low Ceiling: A portable, indoor insecticide fogging unit will soon be marketed by Todd Shipyards Corp.'s Combustion Equipment Div. (Elmhurst, N.Y.). A smaller version of the original Todd fog applicator, the new unit, Model Series 15 M, is driven by electricity instead of gas to eliminate industrial fire hazards.

•

Gravity Feed: Made of materials to suit specific fluids, Hankison Corp.'s (Pittsburgh) new liquid feeding device features a fluid flow variable from ½ pint to 500 gal./day. Liquifeeder maintains a constant rate of feed, is said to be suited to batch-type processes.

•

Titanium Tubing: Outside diameter, .0455 in.; wall thickness .00225 in.; smallest-size tubing ever drawn from

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PRODUCTION . . . . .

commercially pure titanium, says Superior Tube Co. (Norristown, Pa.) of its new titanium cathodes. Still in the development stage, the tubes are expected to find fresh applications in the chemical industry because of this new small-size feature.

•

Speed Control: Jones Motrola Corp. (Stamford, Conn.) has just come forth with a speed monitor. Designed for controlling speed within maximum and minimum limits, actuating relays and solenoids, operating clutches, controlling temperature of agitated mixtures and heat in relation to speed, the monitor has independently adjustable maximum and minimum speed contacts.

•

Cellophane Service: Du Pont Co. has just established a Cellophane Technical Section at its Spruance Cellophane Plant (Richmond, Va.) to handle process and technical development work on cellophane and acetate film for Du Pont's Richmond (Va.), Buffalo (N.Y.), Clinton (Ia.) and Old Hickory (Tenn.) cellophane plants.

•

Available Alloy: In answer to a demand for a stainless steel that will not gall or seize in corrosive service, Cooper Alloy Foundry Co. (Hillside, N.J.) has started producing V2B. A hardenable 18-8 stainless steel containing copper, molybdenum, silicon and beryllium, V2B is readily machinable and easily welded.

•

Tank Heater: Drayer-Hanson, Inc. (Los Angeles) is now marketing new Cal-Fin tank heaters. The heaters feature helically wound serrated fins for combating laminar flow, are designed for either manhole installation (Series MH) or complete submergence in fluids (Series IH).

•

Spray Arc: Designed for build-up work and hard-surfacing applications where the deposited metal can be machined or flame-hardened, General Electric Co.'s (Schenectady) new electrode, G-E Type W-98, is a heavy-covered flame-hardening rod that can be used in all positions, produces a steady-spray arc.

•

Flexible Gasket: Joclin Manufacturing Co. (Hamden, Conn.) recently introduced its new Fluorlastic gaskets. Made of long strips of foamed silicone rubber wrapped in sheets of Teflon (tetrafluorethylene resin), the gaskets combine the flexibility of the former with the chemical resistance of the latter, are claimed effective over a temperature range from —90 C to 200 C.

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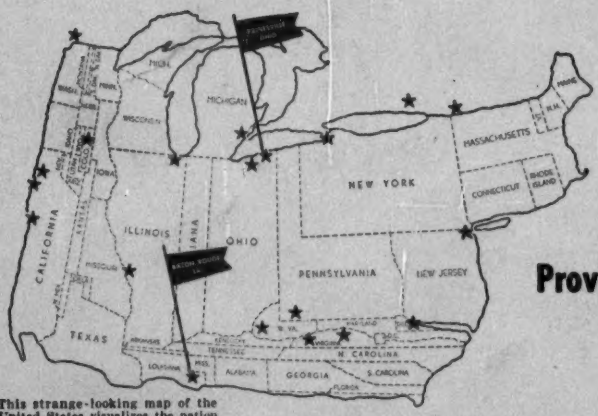

This strange-looking map of the United States visualizes the nation as it might appear if the size of each state were determined by the value its manufacturing concerns add to the nation's industrial output. It is based upon the figures appearing in the 1949 and 1950 Annual Survey of Manufacturers prepared by the U. S. Department of Commerce, Bureau of the Census.

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